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THE

GEOLOGICAL RECORD

FOR

1878.

AN ACCOUNT OF WORKS

ON

GEOLOGY, MINERALOGY, AND PALÆONTOLOGY

PUBLISHED DURING THE YEAR,

WITH SUPPLEMENTS FOR 1874-1877.

EDITED BY

WILLIAM WHITAKER, B.A., F.G.S.,

AND

W. H DALTON, F.G.S.

LONDON:
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PREFACE.

THE great delay in the appearance of this volume is chiefly owing to the non-arrival of the MS. of the sections AMERICA and ARCTIC REGIONS from the Sub-Editor of those sections. Even at the last I have been obliged to issue the volume without these parts, leaving them for the next. Mr. E. WETHERED has undertaken the Sub-Editorship of the section AMERICA in future, and has been working with a will.

Notwithstanding, however, this great and important omission, the present volume is by far the largest of the series, not only as regards the number of pages, but also in the number of entries. This latter amounts to over 3530, or 850 more than the highest number in the four published volumes. This is in great part owing to the energy of my colleague Mr. DALTON, in looking up works that had escaped entry, both in the MS. and in previous volumes. So great, indeed, has been the help given me by Mr. DALTON, that I have joined his name with my own on the titlepage, as joint Editor.

I trust that, by an increase of energy on the part of some of my fellow workers, we may be able to do something to make up for past delays, and may have more than one new volume to show by the next Meeting of the British Association.

WILLIAM WHITAKER.

August, 1882.

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Bull. Sci. Hist. Litt. Nord.—Bulletin Scientifique, Historique et Littéraire du département du Nord et des pays voisins. *Lille.*

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Bull. Soc. Acad. Paris.—Bulletin de la Société Académique de Paris. *Paris.*

Bull. Soc. Agr. Sci. Sarthe.—Bulletin de la Société d'Agriculture, des Sciences et des Arts de la Sarthe. *Le Mans.*

Bull. Soc. Algér.—Bulletin de la Société Algérienne de Climatologie, Sciences physiques et naturelles. *Algiers.*

Bull. Soc. Anthrop. Paris.—Bulletins de la Société d'Anthropologie de Paris. *Paris.*

Bull. Soc. cent. Agric. France.—Bulletin des Séances de la Société centrale d'Agriculture de la France. *Paris.*

Bull. Soc. Chim. Paris.—Bulletin de la Société Chimique de Paris. *Paris.*

Bull. Soc. Encour. Paris.—Bulletin de la Société d'Encouragement de Paris. *Paris.*

Bull. Soc. Géogr. comm. Bordeaux.—Bulletin de la Société de Géographie commerciale de Bordeaux. *Bordeaux.*

Bull. Soc. Géogr. Paris.—Bulletin de la Société de Géographie. *Paris.*

Bull. Soc. Géol. France.—Bulletin de la Société Géologique de la France. *Paris.*

Bull. Soc. Géol. Norm.—Bulletin de la Société Géologique de Normandie. *Havre.*

Bull. Soc. Hist. Nat. Colmar.—Bulletin de la Société d'Histoire Naturelle de Colmar. *Colmar.*

Bull. Soc. Hist. Nat. Metz.—Bulletin de la Société d'Histoire Naturelle de Metz. *Metz.*

Bull. Soc. Hist. Nat. Toulouse.—Bulletin de la Société d'Histoire Naturelle de Toulouse. *Toulouse.*

Bull. Soc. Imp. Nat. Mosc.—Bulletin de la Société Impériale des Naturalistes de Moscou. *Moscow.*

Bull. Soc. Industr. min. St. Etienne.—Bulletin de la Société de l'Industrie minérale de St. Etienne. *St. Etienne.*

Bull. Soc. Industr. Mulhouse.—Bulletin de la Société Industrielle de Mulhouse. *Mulhouse.*

Bull. Soc. Industr. N. France.—Bulletin de la Société Industrielle du Nord de la France. *Lille.*

Bull. Soc. Linn. N. France.—Bulletin mensuel de la Société Linnéenne du Nord de la France. *Amiens.*

Bull. Soc. Linn. Norm.—Bulletin de la Société Linnéenne de Normandie. *Caen.*

Bull. Soc. Mal. Ital.—Bullettino della Società Malacologica Italiana. *Pisa.*

Bull. Soc. Min. France.—Bulletin de la Société Minéralogique de France. *Paris.*

Bull. Soc. Niv. Lett. Sci.—Bulletin de la Société Nivernaise de Lettres, Sciences et Arts. *Nevers.*

Bull. Soc. Philom. Paris.—Bulletin de la Société Philomatique de Paris. *Paris.*

Bull. Soc. R. Bot. Belge.—Bulletin de la Société Royale de Botanique de Belgique. *Brussels.*

Bull. Soc. Ramond.—Bulletin de la Société Ramond. *Bagnères de Bigorre.*

Bull. Soc. Sci. Hist. Nat. Yonne.—Bulletin de la Société des Sciences historiques et naturelles de l'Yonne. *Auxerre.*

Bull. Soc. Sci. Industr. Marseille.—Bulletin de la Société Scientifique Industrielle de Marseille. *Marseilles.*

Bull. Soc. Sci. Litt. Alais.—Bulletin de la Société Scientifique et Littéraire d'Alais. *Alais.*
Bull. Soc. Sci. Lyon.—Bulletin de la Société d'Etudes Scientifiques de Lyon. *Lyons.*
Bull. Soc. Sci. Nancy.—Bulletin de la Société des Sciences de Nancy. *Paris.*
Bull. Soc. Sci. Nat. Béziers.—Bulletin de la Société d'Etude des Sciences Naturelles de Béziers. *Béziers.*
Bull. Soc. Sci. Nat. Isère.—Bulletin de la Société Statistique des Sciences Naturelles et des arts industrielles du département de l'Isère. *Grenoble.*
Bull. Soc. Sci. Nat. Neuchâtel.—Bulletin de la Société des Sciences Naturelles de Neuchâtel. *Neuchatel.*
Bull. Soc. Sci. Nat. Nîmes.—Bulletin de la Société d'Etudes des Sciences Naturelles de Nîmes. *Nismes.*
Bull. Soc. Sci. Nat. Palermo.—Bullettino della Società di Scienze Naturali ed Economiche di Palermo. *Palermo.*
Bull. Soc. Sci. nat. Rouen.—Bulletin de la Société des Amis des Sciences naturelles de Rouen. *Rouen.*
Bull. Soc. Sci. Phys. Nat. Toulouse.—Bulletin de la Société des Sciences Physiques et Naturelles de Toulouse. *Toulouse.*
Bull. Soc. Vaud. Sci. Nat.—Bulletin de la Société Vaudoise des Sciences Naturelles. *Lausanne.*
Bull. U.S. Geol. Surv. Territories.—Bulletin of the United States Geological and Geographical Survey of the Territories. *Washington.*
Bull. U.S. Nat. Mus.—Bulletin of the United States National Museum. *New York.*

Canad. Journ.—The Canadian Journal of Science, Literature, and History: conducted by the Editing Committee of the Canadian Institute. *Toronto.*
Canad. Nat.—Canadian Naturalist and Quarterly Journal of Science, with the Proceedings of the Natural History Society of Montreal. *Montreal.*
Cape Monthly Mag.—Cape Monthly Magazine. *Cape Town.*
Chem. Centr.—Chemisches Centralblatt. *Leipzig.*
Chem. News.—The Chemical News and Journal of Physical Science. 4to. *London.*
Cinc. Quart. Journ. Sci.—Cincinnati Quarterly Journal of Science. *Cincinnati.*
Coll. Guard.—The Colliery Guardian, and Journal of the Coal and Iron Trades. Fol. *London.*
Comm. Geol. Imp. Brazil.—[Publications of] Commissão Geologica do Imperio de Brazil.
Compt. Rend.—Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences de l'Institut de France. 4to. *Paris.*
Compt. Rend. Assoc. Franç.—Association Française pour l'Avancement des Sciences. Comptes-Rendus. *Paris.*
Compt. Rend. Labor. Verdun.—Compte rendu des travaux pour les années 18 . . . . . exécutés dans le laboratoire d'essais agricoles, industriels et médicaux de Verdun. *Bar-le-Duc.*
Compt. Rend. Soc. Industr. Min. St. Étienne.—Comptes Rendus mensuelles des réunions de la Société de l'Industrie Minérale de St. Étienne. *St. Etienne.*
Contrib. Mus. Princeton Coll.—Contributions from the Museum of Geology and Archæology of Princeton College. *Princeton* (? *New Jersey*).
Corr.-Blatt nat. Ver. Riga.—Correspondenz-Blatt des naturforschenden Vereins zu Riga. *Riga.*
Corr.-Blatt zool.-min. Ver. Regensburg.—Correspondenz-Blatt des zoologisch-mineralogischen Vereins zu Regensburg. *Ratisbon.*

Corr. Sci. Paris.—La Correspondance Scientifique. *Paris.*
Corr. Sci. Roma.—Corrispondenza Scientifica di Roma. 4to. *Rome.*
Cronaca liceale.—Cronaca del R. Liceo-ginnasio Filangieri in Monteleone Calabro. 4to. *Catanzaro.*

Dansk. Geogr. Selsk. Tijdskr.—Det Danske Geografiske Selskabs Tijdskrift. *Copenhagen.*
Dauphiné.—Le Dauphiné. Revue Littéraire et Artistique, Courrier des Eaux Thermales de la Région. *Grenoble.*
Denkschr. k. Ak. Wiss.—Denkschriften der kaiserlichen Akademie der Wissenschaften. Mathematisch-naturwissenschaftliche Classe. 4to. *Vienna.*
Denkschr. Schw. nat. Ges.—Denkschriften der schweizerischen naturforschenden Gesellschaft. *Various Swiss Towns.*
Die Natur.—Die Natur. 4to. *Berlin.*

Edinb. Med. Journ.—Edinburgh Medical Journal. *Edinburgh.*
Eff. Soc. Lett. Genova.—Effemeridi della Società di Letture di Genova. *Genoa.*
Émul. Jur.—L'Emulation Jurassienne. Revue mensuelle littéraire et scientifique, publiée par la Société Jurassienne d'Émulation. *Delémont.*
Eng. Min. Journ.—The Engineering and Mining Journal. Fol. *New York.*
Erläut. geol. Specialkarte Preuss.—Erläuterungen zur geologischen Specialkarte von Preussen und den Thüringischen Staaten. *Berlin.*
Erläut. geol. Specialkarte Sachs.—Erläuterungen zur geologischen Specialkarte des Königreichs Sachsens. *Leipzig.*
Ertek. természet. Kör.—Ertekezések a természéttudomanyok Köréböl. [Treatises in Natural Science.] *Budapest.*
Ertesitö Kolozsv. Orv.-Termész.-tudom. Tars.—Ertesitö Kolozsvári Orvos-Természet-tudományi Tarsulat. [Klausenburg Medical and Natural Science Society.] 4to. *Klausenburg.*
Evkön. Erdél. Muz.-Egyl.—Evkönyvek Erdélyi Muzeum-Egylet. [Annals of Transylvanian Museum Society.] 4to. *Klausenburg.*
Explic. Carte géol. France.—Explication de la Carte géologique de France. 4to. *Paris.*

Feuille Nat.—Feuille des Jeunes Naturalistes. *Paris.*
Földt. Közl.—Földtani Közlönye. [Geological Magazine.] *Budapest.*
Forh. Vid.-Selsk. Christiania.—Forhandlinger i Videnskabs-Selskabet i Christiania. *Christiania.*
Forester.—The Forester, or the Nottingham High School Magazine. *Nottingham.*

Gaz. Chim. Ital.—Gazzetta Chimica Italiana. *Palermo.*
Geogr. Mag.—Geographical Magazine. *London.*
Geol. Fören. Stockholm Förh.—Geologiska Föreningens i Stockholm Förhandlingar. *Stockholm.*
Geol. Mag.—The Geological Magazine: or, Monthly Journal of Geology. *London.*
Giorn. Sci. Nat. Econ. Palermo.—Giornale di Scienze Naturali ed Economiche, pubblicato per cura della Società di Scienze Naturali ed Economiche di Palermo. 4to. *Palermo.*
Götting. gel. Anz.—Göttingische gelehrte Anzeigen. 16mo. *Göttingen.*
Good Words.—Good Words. 4to. *London.*
Gornoi Jurn.—Gornoi Jurnale. *St. Petersburg.*

Iron.—Iron. The Journal of Science, Metals, and Manufactures. Fol. *London.*

Iswestija Imp. Obsch. Ljubit. Estest. Antrop. Etnogr.—Iswestija Imp. Obschtschestwa Ljubitelei Estestwosnanija Antropologii i Etnographii. [Journal of the Imperial Society of Naturalists, Anthropologists and Ethnologists.] 4to. *Moscow.*

Iswestija Imp. russ. Geogr. Obsch. Iswestija Imp. russkoi Geographitcheskago Obschtschestwa. [Journal of the Imperial Russian Geographical Society.] *St Petersburg.*

Iswestija Sibirsk. Otd. Imp. russ. Geogr. Obsch. Iswestija Sibirskago Otdela Imp. russkago Geographitcheskago Obschestva. [Journal of the Siberian Branch of the Imperial Russian Geographical Society.] 4to. *Irkutsk.*

Jaarb. Mijnw. Ned. O. Ind. Jaarboek van het Mijnwezen in Nederlandsch Oost Indie. *Amsterdam.*

Jahrb. Berg. Hütt. Sachs. Jahrbuch für das Berg- und Hüttenwesen im Königreiche Sachsen. *Freiberg.*

Jahrb. k. k. geol. Reichs. Jahrbuch der kaiserlich-königlichen geologischen Reichsanstalt. *Vienna.*

Jahrb. kön. ung. geol. Anst. Jahrbuch der königlichen ungarischen geologischen Anstalt, and in Magyar, Évkönyvek Magyar királyi földtani Intézet. *Budapest.*

Jahrb. Nassau Ver. Nat. Jahrbuch des Vereins für Naturkunde im Herzogthum Nassau. *Wiesbaden.*

Jahrb. nat. Landes-Museums Kärnten. Jahrbuch des naturhistorischen Landes-Museum in Kärnten. *Klagenfurt.*

Jahrb. österr. Touristen Club. Jahrbuch des oesterreichischen Touristen Club. *Vienna.*

Jahrb. Schweiz. Alpenclub. Jahrbuch des Schweizer Alpenclub. *Berne.*

Jahresb. Chem. Jahresbericht über die Fortschritte der Chemie und Verwandte Theile anderer Wissenschaften. *Giessen.*

Jahresb. geogr. Ges. Hamburg. Jahresbericht der geographischen Gesellschaft zu Hamburg. *Hamburg.*

Jahresb. Ges. Freund. nat. Gera. Jahresbericht der Gesellschaft Freunden der Naturwissenschaften zu Gera. 8vo. *Gera.*

Jahresb. Handelsch. Wien. Jahresberichte der öffentlichen Handelsmittelschule in Wien. *Vienna.*

Jahresb. k. k. Ober-Realschule Salzburg. Jahres-Berichte der kaiserlich-königlichen Ober-Realschule in Salzburg. *Salzburg.*

Jahresb. nat. Ver. Elberfeld. Jahresberichte der naturwissenschaftliche Vereins zu Elberfeld. *Elberfeld.*

Jahresb. nat. Ges. Graub. Jahresbericht der naturforschenden Gesellschaft Graubündens. *Chur (Coire).*

Jahresb. nat. Ges. Hannover. Jahresbericht der naturhistorischen Gesellschaft zu Hannover. *Hannover.*

Jahresb. naturh. Ver. [illegible] Jahresbericht des naturhistorischen Vereins [illegible]

Jahresb. Osnab. nat. Ver. Jahresbericht des Osnabrücker naturforschenden Vereins. *Osnabrück.*

Jahresb. Realsch. [illegible] *Mülheim.* Jahresberichte der Realschule. . . .

Jahresb. Schles. Ges. vaterl. Cultur. Jahres-Bericht der schlesischen Gesellschaft für vaterländische Kultur. 8vo. *Breslau.*

Jahresh. Ver. vaterl. Nat. Würt. Jahreshefte des Vereins für vaterländische Naturkunde in Württemberg. *Stuttgart.*

Jena. Zeitschr. Nat. Jenaische Zeitschrift für Naturwissenschaft. *Jena.*

Journ. Ac. Nat. Sc. Philad. Journal of the Academy of Natural Sciences of Philadelphia. 4to. *Philadelphia.*

Journ. Agric. Côte d'Or.—Journal d'Agriculture de la Côte d'Or, publié par la Société d'Agriculture et d'Industrie agricole de la Côte d'Or. *Dijon.*

Journ. Anat. Physiol.—Journal of Anatomy and Physiology. *London* and *Cambridge.*

Journ. Anthrop. Inst.—Journal of the Anthropological Institute of Great Britain and Ireland. *London.*

Journ. App. Sci.—Journal of Applied Science. Fol. *London.*

Journ. As. Soc. Beng.—Journal of the Asiatic Society of Bengal. *Calcutta.*

Journ. Bath W. Engl. Soc.—Journal of the Bath and West-of-England Society and Southern-Counties Association for the Encouragement of Agriculture, Arts, Manufactures, and Commerce. *Bath.*

Journ. Bombay Branch R. As. Soc.—Journal of the Bombay Branch of the Royal Asiatic Society. *Bombay.*

Journ. Chem. Soc.—Journal of the Chemical Society. *London.*

Journ. Cincinn. Soc. Nat. Hist.—The Journal of the Cincinnati Society of Natural History. *Cincinnati.*

Journ. Conchyl.—Journal de Conchyliologie, comprenant l'Étude des Mollusques Vivants et Fossiles. *Paris.*

Journ. Iron Steel Inst.—Journal of the Iron and Steel Institute, London. *London.*

Journ. Linn. Soc.—Journal of the Linnean Society. *London.*

Journ. Lond. Inst.—Lecture Supplement to the Journal of the London Institution. *London.*

Journ. Mus. Godeffroy.—Journal des Museum Godeffroy. Geographische, ethnographische und naturwissenschaftliche Mittheilungen. 4to. *Hamburg.*

Journ. prakt. Chem.—Journal für praktische Chemie. *Leipzig.*

Journ. Quek. Club.—Journal of the Quekett Microscopical Club. *London.*

Journ. R. Agric. Soc.—Journal of the Royal Agricultural Society of England. *London.*

Journ. R. As. Soc. G. B. I.—Journal of the Royal Asiatic Society of Great Britain and Ireland. *London.*

Journ. R. Dublin Soc.—Journal of the Royal Dublin Society. *Dublin.*

Journ. R. Geogr. Soc.—Journal of the Royal Geographical Society. *London.*

Journ. R. Geol. Soc. Ireland.—Journal of the Royal Geological Society of Ireland. *London* and *Dublin.*

Journ. R. Hist. Archæol. Assoc. Ireland.—Journal of the Royal Historical and Archæological Association of Ireland. *Dublin.*

Journ. R. Inst. Cornwall.—Journal of the Royal Institution of Cornwall. *Truro.*

Journ. R. Micr. Soc. Journal of the Royal Microscopical Society, containing its Transactions and Proceedings; with other Microscopical and Biological information. *London.*

Journ. R. Soc. N. S. Wales.—Journal and Proceedings of the Royal Society of New South Wales. *Sydney.*

Journ. Soc. Arts.—Journal of the Society of Arts. *London.*

Journ. Straits Branch R. As. Soc.—Journal of the Straits Branch of the Royal Asiatic Society. ? *Singapore.*

Journ. Vict. Inst.—Journal of the Transactions of the Victoria Institute, or Philosophical Society of Great Britain. *London.*

Journ. Winchester Sci. Soc.—Journal of Proceedings of the Winchester and Hampshire Scientific and Literary Society. *Winchester.*

Journ. Zool.—Journal de Zoologie. *Paris.*

Kalmar hushålln. Handl.—Kalmar läns norra hushållningssällskaps Handlingar. [N. Kalmar District Economic Society's Transactions.] *Norrköping.*

Kansas City Rev. Sci. Ind.—The Kansas City Review of Science and Industry. A Monthly Record of Progress in Science, Mechanic Arts, and Agriculture [formerly The Western Review, &c.]. *Kansas City, Mo.*

K. Danske Vid. Selsk. Skr.—Det Kongelige Danske Videnskabernes Selskabs Skrifter, naturvidenskabelig og mathematisk Afdeeling. 4to. *Copenhagen.*

K. Fys. Sällsk. Lund Minnesskr.—Kongl. Fysiografiska Sällskapets in Lund Minnesskrift. 4to. *Lund.*

K. Norsk. Vid. Selsk. Skr.—Det Kongliga Norske Videnskabers Selskabs Skrifter. *Drontheim.*

K. Svenska Vet.-Akad. Handl.—Kongliga Svenska Vetenskaps-Akademiens Handlingar. 4to. *Stockholm.*

La Nature.—La Nature. 4to. *Paris.*

La Plata Monatsschr.—La Plata Monatsschrift. 4to. *Buenos Ayres.*

Land and Water. Fol. *London.*

Landw. Versuchs-Stat. — Die landwirthschaftlichen Versuchs-Stationen. *Berlin.*

Leopoldina.—Leopoldina; amtliches Organ der kaiserliche Leopoldinisch-Carolinische deutsche Akademie der Naturforscher. 4to. *Jena.*

L'Exploration.—L'Exploration. Journal des Conquêtes de la Civilisation sur tous les Points du Globe. *Paris.*

L'Institut.—L'Institut; Journal des Académies et Sociétés Scientifiques de la France et de l'Étranger. *Paris.*

Lit. Ber. Ungarn.—Literarische Berichte aus Ungarn über die Thätigkeit der ungarischen Akademie der Wissenschaften [etc.]. *Budapest.*

Lotos.—Lotos. Zeitschrift für Naturwissenschaften. Herausgegeben vom nat. hist. Verein "Lotos" in Prag. *Prague.*

Lunds Univ. Årsskr.—Lunds Universitets Årsskrift (or Acta Universitatis Lundensis). *Lund.*

Mat. Cart. géol. Suisse.—Matériaux pour la Carte géologique de la Suisse [or] Beiträge zur geologischen Karte der Schweiz. *Berne.*

Mat. Hist. Homme.—Matériaux pour l'Histoire primitive et naturelle de l'Homme, et l'étude du sol, de la faune et de la flore qui s'y rattachent. *Toulouse.*

Math. Természet. Közlem.—Mathematikai és Természettudományi Közlemények, vonatkozólag a hazai viszonyokra. [Mathemetical and Natural Science Notes.] *Budapest.*

Mél. Phys. Chim.—Mélanges Physiques et Chimiques tirés du Bulletin de l'Académie Impériale des Sciences de St.-Pétersbourg. *St. Petersburg.*

Mém. Ac. Imp. St. Pétersbourg.—Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg. *St. Petersburg.*

Mém. Ac. Lyon.—Mémoires de l'Académie des Sciences, Belles-Lettres et Arts de Lyon. Classe des Sciences. *Lyons.*

Mém. Ac. Montpellier.—Mémoires de l'Académie des Sciences de Montpellier. *Montpellier.*

Mém. Ac. R. Belg.—Mémoires de l'Académie Royale des Sciences, ... de Belgique. 4to. *Brussels.*

Mém. Ac. Sci. Dijon.—Mémoires de l'Académie des Sciences, Arts et Belles-Lettres de Dijon. Partie des Sciences. *Dijon.*

Mem. Ac. Sci. Ist. Bologna.—Memorie dell' Accademia delle Scienze dell' Istituto di Bologna. 4to. *Bologna.*

Mem. Ac. Sci. Lisb.—Memorias da Academia Reale das sciencias de Lisboa. Classe de sciencias mathematicas, physicas e naturaes. 4to. *Lisbon.*

Mém. Ac. Sci. Paris.—Mémoires présentés par divers Savants à l'Académie des Sciences de l'Institut de France. 4to. *Paris.*

Mém. Ac. Stanislas.—Mémoires de l'Académie de Stanislas. *Nancy.*

Mém. Ac. Toulouse.—Mémoires de l'Académie des Sciences, Inscriptions et Belles-Lettres de Toulouse. *Toulouse.*

Mem. Amer. Assoc.—Memoirs of the American Association for the Advancement of Science. 4to. *Salem, Mass.*

Mem. Boston Soc. Nat. Hist.—Memoirs of the Boston Society of Natural History. *Boston, U.S.*

Mem. Com. map. geol. Españ.—Memorias de la Comision del Mapa geologico de España. *Madrid.*

Mém. cour. Ac. R. Belg.—Mémoires couronnés et autres Mémoires publiés par l'Académie Royale des Sciences .... de Belgique. *Brussels.*

Mém. cour. sav. étr. Ac. R. Belg.—Mémoires couronnés et Mémoires des Savants étrangers publiés par l'Académie Royale des Sciences, ... de Belgique. 4to. *Brussels.*

Mem. Geol. Surv. Ind.—Memoirs of the Geological Survey of India. *Calcutta.*

Mem. Geol. Surv. Kentucky.—Memoirs of the Geological Survey of Kentucky.

Mem. Lit. Phil. Soc. Manch.—Memoirs of the Literary and Philosophical Society of Manchester. *Manchester.*

Mem. Mus. Harvard Coll.—Memoirs of the Museum of Comparative Zoology at Harvard College. 4to. *Cambridge, U. S. A.*

Mem. Peabody Ac. Sci.—Memoirs of the Peabody Academy of Science. 4to. *Salem, Mass.*

Mem. R. Ac. Sci. Turin.—Memorie della Reale Accademia delle Scienze di Torino. *Turin.*

Mem. R. Com. Geol. Ital.—Memorie per servire alla descrizione della Carta Geologica d' Italia. 4to. *Rome.*

Mem. R. Ist. Lomb.—Memorie del Reale Istituto Lombardo di Scienze e Lettere. *Milan.*

Mem. R. Ist. Veneto.—Memorie del Reale Istituto Veneto di Scienze, Lettere ed Arti. 4to. *Venice.*

Mém. Soc. Acad. Aube.—Mémoires de la Société Académique d'Agriculture, des Sciences, Arts et Belles-Lettres du Département de l'Aube. *Troyes.*

Mém. Soc. Belfort. Emul.—Mémoires de la Société Belfortienne d'Emulation. *Belfort.*

Mém. Soc. centr. Agric. France.—Mémoires de la Société centrale d'Agriculture de France.

Mém. Soc. Émul. Doubs.—Mémoires de la Société d'Émulation du Doubs. *Besançon.*

Mém. Soc. Émul. Nord.—Bulletins et Mémoires de la Société d'Émulation des Côtes du Nord. *St. Brieuc.*

Mém. Soc. Géol. France.—Mémoires de la Société Géologique de la France. 4to. *Paris.*

Mém. Soc. Géol. Nord.—Mémoires de la Société Géologique du Nord. *Lille.*

Mém. Soc. Imp. Nat. Mosc.—Nouveaux Mémoires de la Société Impériale des Naturalistes de Moscou. *Moscow.*

Mém. Soc. Ing. Civ.—Mémoires et Compte rendu des Travaux de la Société des Ingénieurs Civils. *Paris.*

Mém. Soc. nat. Sci. nat. Cherbourg.—Mémoires de la Société nationale des Sciences naturelles de Cherbourg. *Cherbourg.*

Mém. Soc. Phys. Hist. Nat. Genève.—Mémoires de la Société de Physique et d'Histoire Naturelle de Genève. *Geneva.*

Mém. Soc. R. Sci. Liége.—Mémoires de la Société Royale des Sciences de Liége. *Brussels.*

Mém. Soc. Sci. Agr. Arts Lille.—Mémoires de la Société des Sciences, de l'Agriculture et des Arts de Lille. *Paris.*

Mém. Soc. Sci. Cannes.—Mémoires de la Société des Sciences de Cannes. *Cannes.*

Mém. Soc. Sci. Hainaut.—Mémoires et Publications de la Société des Sciences, des Arts et des Lettres du Hainaut. *Mons.*

Mém. Soc. Sci. Nat. Neuchâtel.—Mémoires de la Société des Sciences Naturelles de Neuchâtel. *Neuchatel.*

Mém. Soc. Sci. Nat. Saône-et-Loire.—Bulletins et Mémoires de la Société des Sciences Naturelles de Saône-et-Loire. *Châlons-sur-Saône.*

Mém. Soc. Sci. Phys. Nat. Toulouse.—Mémoires de la Société des Sciences Physiques et Naturelles de Toulouse. *Toulouse.*

Metall. Rev.—The Metallurgical Review. *New York.*

Micr. Journ.—Monthly Microscopical Journal, and Transactions of the Royal Microscopical Society. *London.*

Midl. Nat.—The Midland Naturalist: the Journal of the Associated Natural History, Philosophical, and Archæological Societies and Field Clubs of the Midland Counties. *London* and *Birmingham.*

Min. Journ.—Mining Journal. Fol. *London.*

Min. Mag.—The Mineralogical Magazine and Journal of the Mineralogical Society of Great Britain and Ireland. *London* and *Truro.*

Min. petr. Mitth.—Mineralogische und petrographische Mittheilungen (Tschermak). *Vienna.*

Miscell. Papers Kent Sci. Inst.—Miscellaneous Papers of the Kent Scientific Institute. *Kent, U. S. A.*

Mitth. aargau. Nat. Ges.—Mittheilungen der aargauischen Naturforschenden Gesellschaft.

Mitth. Anthrop. Ges. Wien.—Mittheilungen der anthropologischen Gesellschaft in Wien. *Vienna.*

Mitth. geogr. Anst.—Mittheilungen aus Justus Perthe's geographischer Anstalt, über wichtige neue Erforschungen auf dem Gesammtgebiete der Geographie von A. Petermann. 4to. *Gotha.*

Mitth. Ges. Nat. Ostasiens.—Mittheilungen der deutschen Gesellschaft für Natur- und Volkenkunde Ostasiens. Folio. *Yokohama.*

Mitth. Jahrb. k.-ung. geol. Anst.—Mittheilungen aus dem Jahrbuche der königlich-ungarischen geologischen Anstalt. *Budapest.*

Mitth. k.-k. geogr. Ges.—Mittheilungen der kaiserlich-königlichen geographischen Gesellschaft. *Vienna.*

Mitth. nat. Ges. Andermatt.—Mittheilungen der naturforschenden Gesellschaft zu Andermatt. *Andermatt.*

Mitth. nat. Ges. Bern.—Mittheilungen der naturforschenden Gesellschaft in Bern. *Berne.*

Mitth. nat. Ver. Aussig.—Mittheilungen des naturwissenschaftlichen Vereins in Aussig. *Aussig.*

Mitth. nat. Ver. Steiermark.—Mittheilungen des naturwissenschaftlichen Vereins für Steiermark. *Graz.*

Mitth. nat. Ver. Vorpommern Rügen.—Mittheilungen des naturwissenschaftlichen Vereins von Neu-Vorpommern und Rügen. *Berlin.*

Mitth. Siebenb. Ver. Nat. Hermannstadt.—Mittheilungen des Siebenbürgischer Vereins für Naturwissenschaften zu Hermannstadt. *Hermannstadt.*

Monatsb. k. preuss. Ak. Wiss.—Monatsberichte der königlich preussischen Akademie der Wissenschaften zu Berlin. *Berlin.*

Morphol. Jahrb.—Morphologisches Jahrbuch ein Zeitschrift für Anatomie und Entwickelungsgeschichte. *Leipzig.*

Muegyet. Lapok.—Muegyetemi Lapok. Havi folyoirat a mathematikai természettudomanyok és a technikaitudomanyok elmelek köréböl. [Papers of the Polytechnic Institute.] *Budapest.*

Nachricht. k. Ges. Wiss. Göttingen.—Nachrichten von der königlichen Gesellschaft der Wissenschaften und der Georg-August Universität, Göttingen. *Göttingen.*

Nat. Hist. Journ.—The Natural History Journal. Conducted by the Societies in Friends' Schools. *York.*

Nat. Tijdschr. Ned. Ind. Ver.—Natuurkundig Tijdschrift voor Nederlandsch Indië, uitgegeven door de Natuurkundige Vereeniging . . . . *Batavia.*

Naturaleza.—La Naturaleza. Periodico cientifico de la Sociedad Mexicana de Historia Natural. 4to. *Mexico.*

Naturalist.—The Naturalist: Journal of the West Riding Naturalists' Society, and General Field Club Record. *Huddersfield.*

Nature.—Nature, a weekly illustrated Journal of Science. 4to. *London.*

N. Giorn. Bot. Ital.—Nuovo Giornale Botanico Italiano. *Florence.*

N. Jahrb.—Neues Jahrbuch für Mineralogie, Geologie und Paläontologie. *Stuttgart.*

Notizbl. Ver. Erdk. Darmstadt.—Notizblatt des Vereins für Erdkunde und verwandte Wissenschaften zu Darmstadt und des mittelrheinischen geologischen Vereins. *Darmstadt.*

Nouv. Arch. Mus. Paris.—Nouvelles Archives du Muséum d'Histoire Naturelle à Paris. 4to. *Paris.*

Nova Acta Ac. Cæs. Leop.-Car.—Nova Acta Physico-Medica Academiæ Cæsareæ Leopoldino-Carolinæ Germanicæ Naturæ Curiosorum. *Dresden.*

Nova Acta R. Soc. Upsal.—Nova Acta Regiæ Societatis Upsalensis. 4to. *Upsal.*

N. Staff. Field Club Papers.—North Staffordshire Field Club. Annual Addresses, Papers, etc. *Hanley.*

Nuova Antologia.—Nuova Antologia di Scienze, Lettere ed Arti. *Rome.*

Nyt Mag. Nat.—Nyt Magazin for Naturvidenskaberne. *Christiania.*

Oesterr. Zeitschr. Berg- Hütt.—Oesterreichische Zeitschrift für Berg- und Hüttenwesen. *Vienna.*

Öfv. Finska Vet. Soc. Förh.—Öfversigt af Finska Vetenskaps-Societeten Förhandlingar. *Helsingfors.*

Öfv. K. Vet.-Akad. Förh.—Öfversigt af Kongl. Vetenskaps-Akademiens Förhandlingar. *Stockholm.*

Palæontographica.—Palæontographica. Beiträge zur Naturgeschichte der Vorwelt. 4to. *Cassel.*

Palæontologist.—The Palæontologist. *Cincinnati.*

Pal. Franç.—Paléontologie Française, ou description des Fossiles de la France, continuée par une réunion de paléontologistes sous la direction d'un comité spécial. 4to. *Paris.*

Pal. Soc.—Palæontographical Society [Monographs of]. 4to. *London.*

Pamietniki Ak. umiej. Krakow. math.-przyr.—Pamietniki Akademii umiejetnosci w Krakowie. Wydzial matematyczno-przyrodniczy. [Memoirs of the Cracow Science Academy. Mathematical and Natural History Section.] 4to. *Cracow.*

Papers Eastbourne Nat. Hist. Soc.—Papers of the Eastbourne Natural History Society. 4to. *Eastbourne.*

Papers Miners' Assoc. Cornwall.—Papers and Proceedings of the Miners' Association of Cornwall and Devonshire. *Truro.*

Papers R. Soc. Tasm.—Papers and Proceedings of the Royal Society of Tasmania. *Hobart Town.*

Penn Monthly.—The Penn Monthly Magazine. *Philadelphia.*

Phil. Mag.—London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science. *London.*

Phil. Trans.—Philosophical Transactions of the Royal Society of London. 4to. *London.*

Politecnico.—Il Politecnico. Giornale dell' Ingegneria ed Architettura Civile ed Industriale. *Milan.*

Pop. Sci. Monthly.—The Popular Science Monthly. *New York.*

Pop. Sci. Rev.—Popular Science Review. *London.*

Proc. Ac. Nat. Sci. Philad.—Proceedings of the Academy of Natural Sciences of Philadelphia. *Philadelphia.*

Proc. Amer. Ac.—Proceedings of the American Academy of Arts and Sciences. *Boston, U. S.*

Proc. Amer. Assoc.—Proceedings of the American Association for the Advancement of Science. *Salem.*

Proc. Amer. Phil. Soc.—Proceedings of the American Philosophical Society held at Philadelphia for promoting Useful Knowledge. *Philadelphia.*

Proc. As. Soc. Bengal.—Proceedings of the Asiatic Society of Bengal. *Calcutta.*

Proc. Ashmolean Soc.—Proceedings of the Ashmolean Society. *Oxford.*

Proc. Assoc. Munic. Eng.—Proceedings of the Association of Municipal and Sanitary Engineers and Surveyors. *London.*

Proc. Bath Field Club.—Proceedings of the Bath Natural History and Antiquarian Field Club. *Bath.*

Proc. Belfast Field Club.—Annual Report and Proceedings of the Belfast Naturalists' Field Club. *Belfast.*

Proc. Belfast Nat. Hist. Phil. Soc.—Proceedings of the Belfast Natural History and Philosophical Society. *Belfast.*

Proc. Berwick. Nat. Club.—Annual Report and Proceedings of the Berwickshire Naturalists' Club. *Alnwick.*

Proc. Boston Soc. Nat. Hist.—Proceedings of the Boston Society of Natural History. *Boston, U. S.*

Proc. Bristol Nat. Soc.—Proceedings of the Bristol Naturalists' Society. *London* and *Bristol.*

Proc. Calif. Ac. Sci.—Proceedings of the California Academy of Natural Sciences. *San Francisco.*

Proc. Camb. Phil. Soc.—Proceedings of the Cambridge Philosophical Society. *Cambridge.*

Proc. Chester Soc. Nat. Sci.—Proceedings of the Chester Society of Natural Science. *Chester.*

Proc. Cleveland Inst. Eng.—Proceedings of the Cleveland Institute of Engineers.

Proc. Cotteswold Club.—Proceedings of the Cotteswold Naturalists' Field Club. *Gloucester.*

Proc. Crystall. Soc.—Proceedings of the Crystallological Society [or Association]. *London.*

Proc. Davenp. Ac. Nat. Sci.—Proceedings of the Davenport Academy of Natural Sciences. *Davenport, Iowa.*

Proc. Dorset Field Club.—Proceedings of the Dorset Natural History and Antiquarian Field Club. *Sherborne.*

Proc. Dudley Geol. Soc.—Proceedings of the Dudley and Midland Geological and Scientific Society and Field Club. *Dudley.*

Proc. Geol. Assoc.—Proceedings of the Geologists' Association. *London.*

Proc. Geol. Soc. W. Riding Yorksh.—Proceedings of the Geological and Polytechnic Society of the West Riding of Yorkshire. *Leeds.*

Proc. Inst. Civ. Eng.—Minutes of Proceedings of the Institution of Civil Engineers. *London.*

Proc. Inst. Mech. Eng.—Proceedings of the Institute of Mechanical Engineers. *London.*

Proc. Linn. Soc. N. S. Wales.—Proceedings of the Linnean Society of New South Wales. *Sydney.*

Proc. Lit. Phil. Soc. Liverpool.—Proceedings of the Literary and Philosophical Society of Liverpool. *Liverpool.*

Proc. Liverpool Geol. Soc.—Abstract of the Proceedings of the Liverpool Geological Society. *Liverpool.*

Proc. Lyc. Nat. Hist. New York.—Proceedings of the Lyceum of Natural History of the City of New York. *New York.*

Proc. Manch. Lit. Phil. Soc.—Proceedings of the Manchester Literary and Philosophical Society. *Manchester.*

Proc. Nat. Hist. Soc. Glasg.—Proceedings of the Natural History Society of Glasgow. *Glasgow.*

Proc. Norwich Geol. Soc.—Proceedings of the Norwich Geological Society. *Norwich.*

Proc. Phil. Soc. Glasg.—Proceedings of the Philosophical Society of Glasgow. *Glasgow.*

Proc. Phys. Soc.—Proceedings of the Physical Society of London. *London.*

Proc. R. Dublin Soc.—Scientific Proceedings of the Royal Dublin Society. *Dublin.*

Proc. R. Geogr. Soc.—Proceedings of the Royal Geographical Society. *London.*

Proc. R. Inst.—Notices of the Proceedings at the Meetings of the Members of the Royal Institution of Great Britain, with abstracts of the discourses delivered at the Evening-meetings. *London.*

Proc. R. Irish Ac.—Proceedings of the Royal Irish Academy. *Dublin.*

Proc. R. Phys. Soc. Edin.—Proceedings of the Royal Physical Society of Edinburgh. *Edinburgh.*

Proc. R. Soc.—Proceedings of the Royal Society of London. *London.*

Proc. R. Soc. Edin.—Proceedings of the Royal Society of Edinburgh. *Edinburgh.*

Proc. Sci. Assoc. Trinidad.—Proceedings of the Scientific Association of Trinidad. *Port-of-Spain.*

Proc. Somerset Archæol. Nat. Hist. Soc.—Proceedings of the Somerset Archæological and Natural History Society. *Taunton* and *London.*

Proc. S. Wales Inst. Eng.—Proceedings of the South Wales Institute of Engineers. *Swansea.*

Proc.-verb. Soc. Belg. Micr.—Procès-verbaux de la Société Belge de Microscopie. *Brussels.*

Proc.-verb. Soc. Linn. Bordeaux.—Procès-verbaux des Séances de la Société Linnéenne de Bordeaux. *Bordeaux.*

Proc.-verb. Soc. Mal. Belg.—Procès-verbaux de la Société Malacologique de Belgique. *Brussels.*

Proc. Verb. Soc. Tosc. Sci. Nat.—Processi Verbali della Società Toscana di Scienze Naturali. *Pisa.*

Proc. Warwick. Field Club.—Proceedings of the Warwickshire Naturalists' and Archæologists' Field Club. *Warwick.*

Proc. W. Lond. Sci. Assoc.—Proceedings of the West London Scientific Association and Field Club. *London.*

Proc. Zool. Soc.—Proceedings of the Scientific Meetings of the Zoological Society of London. *London.*

Progr. Realsch. Bautzen.—Programm der Realschule zu Bautzen. *Bautzen.*
Protok. sächs. Ing. Ver.—Protokolle des sächsischen Ingenieur-Vereins. *Dresden.*
Protok. Sitz. Centr. Moor-Komm.—Protokol der Sitzung der Central Moor-Kommission. *Berlin.*
Publ. Inst. R. G.-D. Luxemb.—Publications de l'Institut Royal Grand-Ducal de Luxembourg. Section des Sciences Naturelles. *Luxemburg.*

Quart. Journ. Geol. Soc.—The Quarterly Journal of the Geological Society of London. *London.*
Quart. Journ. Micr. Sci.—The Quarterly Journal of Microscopical Science. *London.*
Quart. Journ. Sci.—Quarterly Journal of Science and Annals of Mining, Metallurgy, Engineering, Industrial Arts, Manufactures. *London.*
Queenslander.—The Queenslander. Fol. *Brisbane.*

Rec. Geol. Surv. Ind.—Records of the Geological Survey of India. *Calcutta.*
Rend. Ac. Sci. Ist. Bologna.—Rendiconti delle Sessioni dell' Accademia delle Scienze dell' Istituto di Bologna. *Bologna.*
Rend. R. Ac. Sci. Napoli.—Rendiconti della Reale Accademia delle Scienze fisiche e matematiche di Napoli. 4to. *Naples.*
Rend. R. Ist. Lomb.—Rendiconti delle Adunanze del Reale Istituto Lombardo di Scienze e Lettere. *Milan.*
Rep. Brit. Assoc.—Report of the British Association for the Advancement of Science. *London.*
Rep. Croydon Micr. Club.—Report and Abstract of Proceedings of the Croydon Microscopical and Natural History Club. *Croydon.*
Rep. E. Kent Nat. Hist. Soc.—Report of the East Kent Natural History Society. *Canterbury.*
Rep. Geol. Surv. W. of 100th Meridian.—Report upon Geographical and Geological Explorations and Surveys West of the One Hundredth Meridian. 4to. *Washington.*
Rep. Leicester Lit. Phil. Soc.—Report of the Council of the Leicester Literary and Philosophical Society. *Leicester.*
Rep. Rugby School Nat. Hist. Soc.—Report of the Rugby School Natural History Society. *Rugby.*
Rep. Teign Nat. Club.—Report of the Proceedings of the Teign Naturalists' Field Club. *Teignmouth.*
Rep. U. S. Geol. Expl. 40 Par.—Report of the United States Geological Exploration of the 40th Parallel. *Washington.*
Rep. U. S. Geol. Surv. Territories.—Report of the United States Geological Survey of the Territories. 4to. *Washington.*
Rep. Winchester Coll. Nat. Hist. Soc.—Report of the Winchester College Natural History Society. *London* and *Winchester.*
Rev. Géogr.—La Revue Géographique internationale. 4to. *Paris.*
Rev. Géol.—Revue de Géologie (by Delesse and De Lapparent). *Paris.*
Rev. Mag. Zool.—Revue et Magasin de Zoologie. *Paris.*
Rev. Mar. Col.—Revue Maritime et Coloniale. *Paris.*
Rev. Min.—Revista Minera. Periodico Cientifico e Industrial. *Madrid.*
Rev. Quest. Sci.—Revue des Questions Scientifiques. *Brussels.*
Rev. Sci.—Revue Scientifique de la France et de l'Étranger. 4to. *Paris.*
Rev. Sci. Nat.—Revue des Sciences Naturelles. *Montpellier.*
Rev. Sci. Suisse.—Revue Scientifique Suisse.
Rev. Univ. Mines.—Revue Universelle des Mines, de la Métallurgie, des Travaux Publics, des Sciences et des Arts appliqués à l'Industrie. *Paris.*
Riv. Mar.—Rivista Marittima. *Rome.*

Riv. Sci.-ind.—Rivista Scientifico-industriale. *Florence.*
Rozpr. Ak. Umiej. Krakow.—Rozprawy i Sprawozdania z Posiedzen. Akademii umiejetnosci w Krakowie. Wydzial matematyczno-przyrodniczy. [Transactions of the Cracow Science Academy. Mathematical and Natural History Section.] *Cracow.*
R. Sch. Mines Mag.—The Royal School of Mines Magazine. *London.*
Russ. Rev.—Russische Revue. (Röttger's.) *St. Petersburg.*

Schrift. nat. Ver. Berlin.—Schriften des naturwissenschaftlichen Vereins zu Berlin. *Berlin.*
Schrift. phys.-ökon. Ges. Königsberg.—Schriften der physikalisch-ökonomischen Gesellschaft zu Königsberg [including *Abhandlungen* and *Sitzungsberichte*]. 4to. *Königsberg.*
Schrift. Ver. Gesch. Bodens.—Schriften des Vereins für die Geschichte des Bodensees und seiner Umgebung. *Lindau.*
Schrift. Ver. nat. Kenntn. Wien.—Schriften des Vereins zur Verbreitung naturwissenschaftlicher Kenntnisse in Wien. 12mo. *Vienna.*
Sci. Contemp. La Scienza Contemporanea. *Messina.*
Sci. Goss.—Hardwicke's Science Gossip. *London.*
Scott. Nat.—The Scottish Naturalist. *Perth.*
Sitz. Ges. Beförd. gesammt. Nat. Marburg.—Sitzungsberichte der Gesellschaft zur Beförderung der gesammten Naturwissenschaften zu Marburg. *Marburg.*
Sitz. Ges. nat. Freunde Berlin.—Sitzungs-Bericht der Gesellschaft naturforschender Freunde zu Berlin. *Berlin.*
Sitz. Isis Dresden.—Sitzungs-Berichte der naturwissenschaftlichen Gesellschaft Isis in Dresden. *Dresden.*
Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.—Sitzungsberichte der kaiserlichen Akademie der Wissenschaften, mathematisch-naturwissenschaftliche Classe. *Vienna.*
Sitz. k.-bay. Ak. Wiss.—Sitzungsberichte der mathematisch-physikalischen Classe der königlich-bayerischen Akademie der Wissenschaften zu München. *Munich.*
Sitz. k. böhm. Ges. Wiss.—Sitzungsberichte der königlichen böhmischen Gesellschaft der Wissenschaften. *Prague.*
Sitz. Nat. Ges. Dorpat.—Sitzungsberichte der Naturforscher Gesellschaft zu Dorpat. *Dorpat.*
Sitz. nat. Ges. Hannover.—Sitzungsberichte der naturhistorischen Gesellschaft in Hannover. *Hanover.*
Sitz. nat. Ges. Leipzig.—Sitzungsberichte der naturforschenden Gesellschaft zu Leipzig. *Leipzig.*
Sitz. phys.-med. Soc. Erlangen.—Sitzungsberichte der physikalisch-medicinischen Societät zu Erlangen. *Erlangen.*
Skand. Nat. Forh.—Skandinavisk Naturforskerinödet Forhandlinger. *Copenhagen.*
Sprawozd. Kom. Fizyjogr. Krakow.--Akademija Umiejetnosci w Krakowie. Sprawozdanie Komisyi Fizyjograficznej obejmujace poglad na czynnosci dokonane w ciagu roku 187 . oraz materyjaly do fizyjografii Galicyi. [Cracow Academy of Science. Reports of the Physiographical Committee.] *Cracow.*
Students' Mag.—The Students' Magazine of Science and Art: a Monthly Journal . . . . . for Private and Class Students and Teachers. 4to. *London.*
Sver. Geol. undersökn.—Sveriges Geologiska Undersökning. [Swedish Geological Survey.] *Stockholm.*

Termész. Füzet.—Természetrajzi Füzetek, az Állat-, Növény-, Asvány- és Földtan Köréböl. [Natural History Book for Zoology, Botany, Mineralogy, and Geology.] *Budapest.*

Természet. Közl.—Természettudományi Közlöny; havi folyóirat a kozerdekü ismeretek terjesztésére. [Monthly Journal of Natural Science.] *Budapest.*

Trans. Ac. Sci. St. Louis.—The Transactions of the Academy of Science of St. Louis. *St. Louis* [*Missouri*].

Trans. Adelaide Phil. Soc.—Transactions and Proceedings of the Adelaide Philosophical Society. *Adelaide.*

Trans. Albany Inst.—Transactions of the Albany Institute. *Albany.*

Trans. Amer. Inst. Min. Eng.—Transactions of the American Institute of Mining Engineers. *Philadelphia.*

Trans. Amer. Phil. Soc.—Transactions of the American Philosophical Society held at Philadelphia for promoting Useful Knowledge. 4to. *Philadelphia.*

Trans. Amer. Soc. Civ. Eng.—Transactions of the American Society of Civil Engineers.

Trans. Barrow Nat. Club.—Transactions [or Annual Report and Proceedings] of the Barrow Naturalists' Field Club. *Barrow-in-Furness.*

Trans. Bedfordsh. Nat. Hist. Soc.—Abstract of Proceedings and Transactions of the Bedfordshire Natural History Society and Field Club. *Bedford.*

Trans. Bot. Soc. Edin.—Transactions and Proceedings of the Botanical Society of Edinburgh. *Edinburgh.*

Trans. Camb. Phil. Soc.—Transactions of the Cambridge Philosophical Society. 4to. *Cambridge.*

Trans. Cardiff Nat. Soc.—Report and Transactions of the Cardiff Naturalists' Society. *Cardiff.*

Trans. Chesterfield Inst. Eng.—Chesterfield and Derbyshire Institute of Mining, Civil, and Mechanical Engineers.—Transactions. *London* and *Derby.*

Trans. Clifton Coll. Sci. Soc.—Transactions of the Clifton College Scientific Society. *Clifton* (*Bristol*).

Trans. Conn. Ac. Sci.—Transactions of the Connecticut Academy of Arts and Sciences. *Newhaven* [*U. S.*]

Trans. Cumb. Assoc.—Transactions of the Cumberland Association for the Advancement of Literature and Science. *Carlisle.*

Trans. Devon. Assoc.—Transactions of the Devonshire Association for the Advancement of Science, Literature, and Art. *Plymouth.*

Trans. Edin. Geol. Soc.—Transactions of the Edinburgh Geological Society. *Edinburgh.*

Trans. Geol. Soc. Glasg.—Transactions of the Geological Society of Glasgow. *Glasgow.*

Trans. Hist. Soc. Lanc. Chesh.—Transactions of the Historical Society of Lancashire and Cheshire. *Liverpool.*

Trans. Inst. Surv.—Transactions of the Institution of Surveyors. *London.*

Trans. Kansas Ac. Sci.—Transactions of the Kansas Academy of Science. *Topeka, Kansas.*

Trans. Leicester Lit. Phil. Soc.—Transactions of the Leicester Literary and Philosophical Society. *Leicester.*

Trans. Linn. Soc.—Transactions of the Linnean Society. 4to. *London.*

Trans. Manch. Geol. Soc.—Transactions of the Manchester Geological Society. *Manchester.*

Trans. Midland Inst. Eng.—[Transactions of the] Midland Institute of Mining, Civil, and Mechanical Engineers. *Barnsley.*

Trans. Nat. Hist. Soc. Northumb. Durham.—Transactions of the Natural History Society of Northumberland and Durham. *Newcastle-on-Tyne.*

Trans. N. Engl. Inst. Eng.—North of England Institute of Mining and Mechanical Engineers.—Transactions. *Newcastle-on-Tyne.*

Trans. Newbury Field Club.—Transactions of the Newbury Field Club. *Newbury.*

Trans. Norfolk Nat. Soc.—Transactions of the Norfolk and Norwich Naturalists' Society. *Norwich.*

Trans. Nov. Scot. Inst.—Proceedings and Transactions of the Nova Scotian Institute of Natural Science. *Halifax, N. S.*

Trans. N. Zealand Inst.—Transactions and Proceedings of the New Zealand Institute. *Wellington.*

Trans. Plymouth Inst.—Annual Report and Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society. *Plymouth.*

Trans. R. Geol. Soc. Cornw.—Transactions of the Royal Geological Society of Cornwall. *Penzance.*

Trans. R. Irish Ac.—Transactions of the Royal Irish Academy. 4to. *Dublin.*

Trans. R. Soc. Edin.—Transactions of the Royal Society of Edinburgh. 4to. *Edinburgh.*

Trans. R. Soc. Vict.—Transactions and Proceedings of the Royal Society of Victoria. *Melbourne.*

Trans. S. Midl. Inst. Eng.—Transactions of the South Midland Institute of Mining, Civil, and Mechanical Engineers. *Birmingham.*

Trans. S. Staff. Inst. Eng.—The South Staffordshire and East Worcestershire Institute of Mining Engineers.—Transactions. *Dudley.*

Trans. Watford Nat. Hist. Soc.—Transactions of the Watford Natural History Society and Hertfordshire Field Club. *Watford* and *Hertford.*

Trans. Wisconsin Ac. Sci.—Transactions of the Wisconsin Academy of Sciences, Arts, and Letters. *Madison.*

Trans. Woolhope Field Club.—Transactions of the Woolhope Naturalists' Field Club. *Hereford.*

Trans. Zool. Soc.—Transactions of the Zoological Society of London. 4to. *London.*

Tromsö Mus. Aarsh.—Tromsö Museums Aarshefter. *Tromsö.*

Trudi Obsch. Estest. Imp. Univ. Kazan.—Trudi Obschestva Estestvoispitatelei pri Imp. Kazanskome Universitetye. [Trans. Nat. Soc. Kazan Univ.] 4to. *Kazan.*

Trudi St. Pet. Obsch. Estest.—Trudi S. Peterburgskago Obschestva Estestvoispitatelei. [Proc. St. Petersburg Nat. Hist. Soc.] *St. Petersburg.*

Verh. bergm. Ver. Freiburg.—Verhandlungen des bergmännischen Vereins zu Freiburg. *Freiburg.*

Verh. Berl. Ges. Anthrop.—Verhandlungen der Berliner Gesellschaft für Anthropologie. *Berlin.*

Verh. k.-k. geol. Reichs.—Verhandlungen der kaiserlich-königlichen geologischen Reichsanstalt. *Vienna.*

Verh. nat. Ges. Basel.—Verhandlungen der naturforschenden Gesellschaft in Basel. *Basle.*

Verh. nat.-med. Ver. Heidelberg.—Verhandlungen des naturhistorisch-medicinischen Vereins zu Heidelberg. *Heidelberg.*

Verh. nat. Ver. Brünn.—Verhandlungen des naturforschenden Vereins zu Brünn. *Brünn.*

Verh. nat. Ver. Carlsruhe.—Verhandlungen des naturwissenschaftlichen Vereins in Carlsruhe. *Carlsruhe.*

Verh. nat. Ver. preuss. Rheinl.—Verhandlungen des naturhistorischen Vereins der preussischen Rheinlande und Westfalens [including *Sitzungsberichte* and *Correspondenz-Blatt*]. *Bonn.*

Verh. Ver. nat. Unt. Hamburg.—Verhandlungen des Vereins für naturwissenschaftliche Unterhaltung zu Hamburg. *Hamburg.*

Verh. Würzb. phys.-med. Ges.—Verhandlungen der physikalisch-medicinischen Gesellschaft in Würzburg. *Würzburg.*

Versl. Med. Kon. Ak. Wet.—Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen. *Amsterdam.*

Vid. Medd. Nat. Foren. Kjöbenhavn.—Videnskabelige Meddelelser fra den Naturhistoriske Forening i Kjöbenhavn. *Copenhagen.*

Vierteljahrsschr. gerichtl. Med.—Vierteljahrsschrift für gerichtlich Medicin.

Vierteljahrsschr. nat. Ges. Zürich.—Vierteljahrsschrift der naturforschenden Gesellschaft in Zürich. *Zurich.*

Wilts. Arch. Nat. Hist. Mag.—The Wiltshire Archæological and Natural History Magazine, published under the direction of the Society founded in that county. *Devizes.*

Wochenschr. österr. Ing.- Arch.-Ver.—Wochenschriften des österreichischen Ingenieur- und Architekten-Vereins. 4to. *Vienna.*

Württ. Jahr. Stat. Landesk.—Württembergische Jahrbücher für Statistik und Landeskunde. 4to. *Stuttgart.*

Zapiski Imp. S. Peterb. Min. Obsch.—Zapiski Imp. S. Peterburgskago Mineralogitcheskago Obschestva. [Notices of the Imperial Mineralogical Society of St. Petersburg.] *St. Petersburg.*

Zapiski Novoruss. Obsch. Estest.—Zapiski Novorussiiskago Obschestva Estestvoispitatelei. [Notices of the New Russia Naturalists' Society.] *Odessa.*

Zeitschr. allgem. österr. Apothek-Ver.—Zeitschrift des allgemeinen österreichischen Apothek-Vereins. *Vienna.*

Zeitschr. Bauwesen.—Zeitschrift für Bauwesen. *Berlin.*

Zeitschr. Berg- Hütt. Salinenw.—Zeitschrift für das Berg-, Hütten- u. Salinenwesen im preussischen Staate. 4to. *Berlin.*

Zeitschr. berg- hütt. Ver. Steierm. Kärnten.—Zeitschrift des berg- und hüttenmännischen Vereins für Steiermark und Kärnten. *Klagenfurt.*

Zeitschr. deutsch. geol. Ges.—Zeitschrift der deutschen geologischen Gesellschaft. *Berlin.*

Zeitschr. deutsch. österr. Alpenver.—Zeitschrift des deutschen und österreichischen Alpenvereins. *Munich.*

Zeitschr. Ferdinand. Innsbruck.—Zeitschrift des Ferdinandeums für Tirol und Vorarlberg. *Innsbruck.*

Zeitschr. gesammt. Nat.—Zeitschrift für die gesammten Naturwissenschaften. Originalabhandlungen und monatliches Repertorium der . . . Geologie, Oryktognosie, Palæontologie . . . *Berlin.*

Zeitschr. Kryst. Min.—Zeitschrift für Krystallographie und Mineralogie, unter Mitwirkung zahlreicher Fachgenossen des In- und Auslandes. *Leipzig.*

Zeitschr. oberschles. berg- hütt. Ver.—Zeitschrift des oberschlesischen berg- und hüttenmännischen Vereins. *Berlin.*

Zeitschr. österr. Ges. Meteor.—Zeitschrift der österreichischen Ingenieur-Gesellschaft für Meteorologie. 8vo. *Vienna.*

Zeitschr. österr. Ing.- Arch.-Ver.—Zeitschrift des österreichischen Ingenieur- und Architekten-Vereins. Fol. *Vienna.*

Zeitschr. Reg. Bez. Cassel.—Landwirthlich Zeitschrift des Regierungs-Bezirk Cassel. *Cassel.*

Zeitschr. wiss. Zool.—Zeitschrift für wissenschaftliche Zoologie. *Leipzig.*

Zool. Garten.—Der zoologische Garten, Organ der zoologischen Gesellschaft zu Frankfurt. *Frankfort.*

ERRATA, &c.

P. 2, line 16, *for* Ikeston *read* Ilkeston.

„ line 21, add *Coal and Iron Trades Gazette*, vol. iv. p. 355.

„ line 22, add *Coal and Iron Trades Gazette*, vol. iv. p. 392.

P. 11, line 16, *for* continued *read* combined.

P. 17, line 5, *for* 8 *read* 9.

P. 24, **Oldham**. Wrongly entered. 2 papers:—"Geological Section for 1876," and "Note on the White Lias in . . . . ."

P. 24, line 2 from foot, *after* ice. *add*:—Gives analyses. Entered by mistake in the Geological Record for 1877, p. 246.

P. 32, line 20 from foot, *add* one at Rugby.

P. 33, line 22, *add* and stratigraphical details.

P. 35, line 3, *for* Garnet *read* Gurnet; line 5, *for* Bunbridge *read* Bembridge.

P. 37, line 21, *after* 192 *add* –194, *and as notice*:—The red Coal-Measures Shales under the Permian breccia are the highest Carboniferous rocks in Great Britain.

P. 38, line 21, *for* **Gwilt** *read* **Gurlt**.

P. 44, line 15, *after* 377, *add* and *Mitth. nat. Ges. Bern*, p. 65.

„ line 16, for Gamclulücke *read* Gamschilücke.

P. 47, line 10 from foot, *after* 229 *add* –267, pls. x., xi.

P. 49. Cancel **Berthelin** (refers to recent fauna, *baie* [bay] being misprinted *bois*).

P. 50, (**Boyer**) *after* 400 *add* map and 23 sections, *and for the notice read*:—The formations range from Keuper to Portlandian. Measurements of beds, list of principal fossils, and notes on the many faults are given.

P. 53, last line, after *Nat.* add for 1877, p. 215.

P. 55, line 2 from foot, *for* v. t. *read* t. v.

P. 57, line 6 from foot, *after* 615 *add* –662, pls. xxiii., xxiv.; *and to notice add*:—Describes and figures 2 new varieties of *Aporrhais speciosa* (*Margerini* and *megalopolitana*).

P. 61, line 10 from foot, *add* and *Ann. Soc. acad. Nantes*, pp. 88–91.

P. 62, line 7, *add* and *Ann. Soc. acad. Nantes*, p. 314.

P. 64, line 9, *for* place *read* places.

,, line 15, *for* Wesphalian *read* Westphalian.

P. 73, line 7 from foot, for *Alpeverein* read *Alpenverein*.

„ line 18 from foot, *for* Kovnogoot *read* Kovno Govt.

P. 78, line 17, *after* 148 *add* and *Denkschr. k. Ak. Wiss. Wien*, Bd. xxxix. p. 1, 3 pls.

P. 80, line 19 from foot, *for* 195 *read* 185.

P. 85, line 24, *after* t. ii. *add* p. 340.

P. 91, line 2 from foot, should be *Mem. Ac. Sci. Dijon*, t. v.

P. 98, line 19 from foot, *for* verg *read* berg.

P. 99, line 2 from foot, *for* encoomic *read* economic.

P. 107, line 19, *for* shist *read* schist.

,, line 21, *before* analyses *insert* gives.

P. 109. **Staub.** More correctly entered under Plants, p. 380.

P. 117, line 11, *after* 501 *add* and *Bull. Soc. Linn. Norm.* sér. 3, t. ii. p. 6.

P. 119, line 22, *for* Land *read* Sand.

P. 122, line 5, *for* 81 *read* 85.

„ line 11, from foot, *for* okregy *read* okregu.

„ line 12 from foot, *for* kredowych *read* krédowych.

P. 132, line 9, *for* **Enerst** *read* **Ernest**.

P. 135, line 19 from foot, *after* 1877 *add* and *Emul. Jur.* 1878, p. 257.

P. 136, line 21, *for* **Hapke** read **Häpke.**

P. 137, line 2, *for* Pˇibram *read* Přibram.

„ line 21 from foot, for *berg- Ver.* read *berg- hütt. Ver. Steierm.*

P. 140, line 19, *after* Basin.] add *Ber. Senckenb. nat. Ges.*

P. 141, line 15 from foot, for 8vo. *Prague* read *Lotos*, pp. 19.

P. 143, line 17 from foot, *for* Westrande *read* Weststrande.

„ line 16 from foot, for *Sitzungsb.* read *Abh.*

„ line 15 from foot, *for* p. 17 [1876.] *read* p. 93 [1877.].

P. 144, line 6 from foot, razviedotchniche is one word.

Pp. 146, 147, **Pantanelli.** The references should be *Atti R. Ac. Siena.*

P. 150, line 7 from foot, for 8vo. *Budapest* read *Földt. Közl.* köt. vi.

P. 153, line 6 from foot, *cancel* and.

P. 155, line 5, *for* in den *read* der ; *for* Beitrag *read* Beiträge.

„ line 13 from foot, *for* 290 *read* 299; *inclose* analysis by **J. Bernath** *in brackets.*

P. 155, line 5 from foot, *for* Történelnie *read* Történelme.

P. 169, line 17 from foot, *for* ambtenaren *read* ambten ären.

P. 170. Cancel **Radan**, entered by oversight.

P. 171, line 5, *after* Brook *insert* and.

P. 179, line 12, cancel **Enys** (properly entered in p. 195).

P. 183, line 18 from foot, for *Corivensis* read *Corioensis.*

P. 185, line 11 from foot, *after* 500 *add* , 900–902.

P. 187, line 15, *for* Willet's *read* Hallet's.

P. 189, last line, *add* See also *Gótting. gel. Anz.* p. 558.

P. 190, line 7, *after* earthquakes *add* :—Refers also to Algeria, Lesbos, Carinthia, and the Pyrenees.

P. 191, line 7, *after* 172 *add* , and *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. p. 387.

P. 195, line 14 from foot, *after* 79 *add* 287, 288.

P. 197, line 14, before *Hanover* insert 27–28 *Jahresber. nat. Ges.*

P. 198, line 16 from foot, *for* Band *read* Bund.

P. 200, line 5, *for* **H.** *read* **G. R.** Die Deltas. Ihre Morphologie, geographische Verbreitung und Entstehungs-Bedingungen.

P. 214, line 20 from foot, *for* **Hanan** *read* **Hanau**.

P. 218, lines 15 & 17 from foot, cancel *Soc.*

P. 221, line 17, *add* , and *Min. petr. Mitth.* Bd. i. p. 280.

P. 223. Cancel **Törnebohm,** entered by mistake.

P. 229. Cancel **Muck**, entered by mistake.

P. 234. Cancel **Prendel**, entered by mistake (add notice to entry in GEOLOGICAL RECORD for 1877, p. 220).

P. 242, line 15 from foot, *for* thorina *read* thoria.

P. 252, line 7, for *Kologsv. Orv. Termész. Tudom.* read *Kolozsv. Orv-Termész.*

P. 255, after last line, *add* :—From boulders, Furness.

P. 260, lines 8 & 9 from foot, for *Erganz.* Bd. *read* Erganzbd.

P. 263. Cancel **Silvestri**, entered by mistake.

„ line 18 from foot, *for* visinutmineralier *read* bismutmineralier.

P. 264, line 17 from foot, *for* Chlorate of Soda *read* Chloride of Sodium.

P. 267, **Wadsworth**, to first entry, *add* :—Shows that chalcedony, agate, opal, &c. are fusible. Second entry, *add* :—Shows this mineral to be Wollastonite.

P. 268, **Barnes** and **Grimshaw** misplaced; should be in p. 284.

P. 274. Cancel **Marck**, entered by mistake.

P. 279. Cancel **Volger**, entered by mistake.

P. 283, line 9, *for* Spars *read* Spas.

P. 286, line 16, *for* scoverta, *read* scoperta.

P. 293, line 22, *for* Embedocles *read* Empedocles.

„ line 7 from foot, *for* hypodus *read* hippodus.

„ line 9 from foot, *for* longicristus *read* longicristis.

P. 299, line 21, for *Cœmausi* read *Cœmansi.*

P. 305, line 8 from foot, *for* Sphyrna *read* Sphyræna.

P. 313, line 11, *for* tropitus *read* tropilus.

„ line 21, *for* Clisiophylum *read* Clisiophyllum.

P. 313, line 4 from foot, *for* Briarocrinus *read* Briarecrinus.
„ line 2 from foot, *for* Olielochirus *read* Clidochirus.
„ last line, *for* Pycnasaccus *read* Pycnosaccus.

P. 314, line 10, *for* Encystis *read* Eucystis.

P. 315. **Bayle.** Other new generic names are *Haaniceras*, *Pachyceras*, *Schlotheimia*, *Pictonia*, and *Echioceras* (Cephalopoda), *Lapeirousia* and *Myophorella* (Lamellibranchs), *Zeilleria*, *Trigeria*, *Uncinulus*, and *Uncinulina* (Brachiopods), *Waagenia*, preoccupied, is replaced by *Sonninia*. *For* Reineckia *read* Reineckeia. [Abstract in *Bull. Soc. Géol. France*, 1879.]

P. 316, line 17, for *Brockoni* read *Brochoni*.

P. 322, line 2, *for* blaies *read* bleues.

P. 329, line 12, *for* tisga *read* tioga.

P. 337. *To notice of Neumayr should be added*:—Founds *Waagenia*, n. gen., for *Aspidoceras hybonotum*.

P. 342, line 22, *after* 239 *add*:—Reprinted in *Scudder's Entomological Notes*, 6, pp. 35, 36.

P. 352. Cancel **Barrett.**

P. 363. Cancel **Scudder**, 2nd and 8th titles.

P. 374. The 3 titles are parts 3–5 of *Flora Fossilis Arctica*, Bd. v.

P. 375, line 18 from foot, *for* Grewiopsis *read* Greviopsis.

P. 384, line 13, *after* ii. *add* iii.

P. 391. **New South Wales.** Also a French edition, Carte Min. . . . . et Statistique générale.

P. 393. **Rhone Basin** should have been in Supplement.

P. 402. **Hannay**, entered before, p. 329.

P. 407. **Saporta** should have been in Supplement.

P. 413, line 11, *for* et la *read* de.

THE
GEOLOGICAL RECORD
FOR 1878.

STRATIGRAPHICAL AND DESCRIPTIVE GEOLOGY.

1. *BRITISH ISLES.*

Sub-Editor, W. Topley, F.G.S., Assoc. Inst. C.E.

Adams, G. F. On the Maesteg Tunnel. *Proc. S. Wales Inst. Eng.* vol. x. pp. 304–319; discussion, pp. 331–334, pls. xxiv.–xxviii.
Several sections are given.

Allen, C. H. The Boulder Clay of Furness. *Trans. Barrow Nat. Field Club*, vol. ii. pp. 60–66; 5 plates (sections).

Anon. [**E. Charlesworth.**] Fossil Exploration of Suffolk Crag (Orford Castle) and Hampshire Eocene Cliffs. 8vo. *London.* Pp. 8.
Extract from Brander's 'Fossilia Hantoniensia.' Notes on Hampshire Fossils and Note on English Crag History, by **E. Charlesworth.**

——. [**M. W. H.**] Our Isle of Wight Geological Trip.—Part I. *R. Sch. Mines Mag.* vol. ii. pp. 77–81.
Describes the sections from Black Gang Chine to Freshwater: Wealden to Chalk.

——. [**J. S. Jeans** ?] Notes on the Iron and Steel Industries of the United Kingdom in 1878. *Journ. Iron Steel Inst.* pp. 537–575.
Includes remarks on the elimination of phosphorus from Cleveland iron. Opening of a new Coal Field in Yorkshire (near Hemsworth, 7 miles from Barnsley. See also *Coll. Guard.* vol. xxxvi. p. 226). Mining operations at Aldwarke Main. R. B. N.

——. Excursion to the Wrekin. *Proc. Warwick Field Club,* 1878, pp. 41, 42. [Geological details by **Dr. Callaway.**]

Anon. Report of the Field Day on Tuesday, May 1st [1877]. 8 *Ann. Rep. Wellington Coll. Nat. Sci. Soc.* pp. 75–77.
Notices sections in Cretaceous and U. Oolitic rocks near Aylesbury.

——. Reports of Societies. *Mid. Nat.* vol. i.—p. 55. **S. Spruce.** Geological Notes on the Trip to Clent Hills.—p. 112. **F. A. Grayston.** The Correlation of the Leicestershire, Warwickshire, South Staffordshire and Shropshire Coalfields.—p. 142. **Rev. H. W. Crosskey.** Some Problems in Glacial Geology.
Brief notices of papers not elsewhere published.

——. Report of Excursion of Manchester Scientific Students Assoc. to Weston Point Quarries, Runcorn. *Manchester City News*, Aug. 3.
Geology described by **John Plant.**

——. New Ironstone Field near Airdrie [Monklands]. *Coll. Guard.* vol. xxxv. p. 152.

——. The Kilburn Seam of Coal near Ilkeston [Newthorpe Lodge Colliery]. *Coll. Guard.* vol. xxxv. p. 300.

——. Winning of Coal [Barnsley bed] at Houghton Main Colliery, near Barnsley. *Coll. Guard.* vol. xxxv. p. 306.

——. Important Find of Coal [near Lower Gornal and on Garn Goch Common]. *Coll. Guard.* vol. xxxv. pp. 549, 753. Coal & Iron Trades Gazette. Vol IV. p 355.

——. Find of Iron Ore [Kirksanton, Cumberland]. *Ibid.* p. 592. Coal & Iron Trades Gazette, Vol IV. p. 392.

——. Opening of New Collieries near Maesteg. *Ibid.* p. 754.

——. Important Discovery of Coal in Dean Forest [Howbeach Colliery]. *Coll. Guard.* vol. xxxv. p. 795.

——. Coal Mine Photography in the Forest of Dean. *Ibid.* p. 906.
Notices the occurrence, *in situ*, of 2 erect *Sigillaria* trunks.

——. Discovery of Coal in the Rhondda Valley [Ynys-y-Wiwer]; at Ingleton [Inglewood Colliery]; at Pontypridd [Marine Rhondda Colliery]. *Coll. Guard.* vol. xxxv. pp. 919, 959, vol. xxxvi. p. 875.

——. Bothwell Coal Field [Douglas Park]. *Coll. Guard.* vol. xxxvi. p. 302.

——. A new coalfield in Lanarkshire. *Ibid.* p. 455.

——. The South Wales Coal Field . . . . . *Ibid.* p. 468.

——. [**M. B. G.**] The Bristol Coalfield. *Ibid.* p. 581.
Gives an account of the different seams of coal.

Baily, W. H. Sketch of the Geology of Dublin and Wicklow. *Sci. Goss.* no. 164, pp. 179–183; map and woodcuts.
The granitic hills S. of Dublin are described, and the L. Silurian metamorphic rocks which flank the granitic range. The Cambrian rocks of Bray and Howth are noticed, and the peculiar fossils they con-

tain are figured and described. Some account is given of the Carboniferous and other rocks exposed along the shore N. of Dublin, and of the contents of the peat-bog. A. J. J-B.

Bedwell, F. A. Notes on the Bridlington Crag and Boulder Clay. *Geol. Mag.* dec. ii. vol. v. pp. 517–521.

Confirms the succession given by Mr. Lamplugh that the "Crag" bed lies on the blue clay or basement bed, but is below the snuff-coloured laminated clay, while the purple clay is above the last. E. B. T.

Beesley, Thomas. The Lias of Fenny Compton, Warwickshire. *Proc. Warwicksh. Nat. Field Club* [for] 1877, pp. 1–22.

Describes sections in much detail, giving analysis of an alkaline spring, and a list of fossils from the *Ammonites Jamesoni* zone.

Bidgood, W. Cannington Park Quarries. *Proc. Somerset Archæol. Nat. Hist. Soc.* vol. xxiii. (n. ser. vol. iii.) pt. i. pp. 60–62.

Records previous opinions on the age of the beds. Considers their Carboniferous age proved.

Birbeck, G. The Bryncethin and Ogmore Valley Mineral District. *Proc. S. Wales Inst. Eng.* vol. x. pp. 42–52; discussion, pp. 80–85 and 263–266, plan and sections.

Gives a general description of the seams of coal, of faults, etc.

Birds, J. A. Geology of the Channel Islands. *Geol. Mag.* dec. ii. vol. v. pp. 79–86, woodcut (geol. section), pp. 111–115.

Describes the igneous rocks. Discusses their age and that of the sedimentary rocks of Jersey; but the evidence on these points is small. A deposit of clay and brick-earth, often with Chalk-flints, occurs over the islands, and is considered evidence of submergence during the Glacial period. W. T.

Black, W. J. Remarks on the Chesil Bank. *Trans. Manch. Geol. Soc.* vol. xv. pt. iii. pp. 43–50.

Considers the bank to be the development of a shingle-bar obstructing the entrance of the estuary into which flowed the Wey, the Jordan, and the Osmington. Quotes Prestwich's details. C. E. R.

Blake, Rev. J. F. On the Chalk of Yorkshire. *Proc. Geol. Assoc.* vol. v. no. 5, pp. 232–270.

Reviews Barrois' classification. Concludes that the colour of the red beds has been caused after deposition. The Cretaceous beds rest on an irregular surface of the older formations, so that the lowest part of the former varies much in thickness. In the greater part of the Yorkshire Chalk the distribution of flints is constant enough to be a guide in subdivision. The following descending order of divisions is given:—

Soft Chalk without flints. Zone of *Marsupites*. *Belemn. mucronata.* 320 ft.

Chalk with imperfect flints. Zone of *Micrasters*. 120 ft.
Chalk with many tabular flints. Barren zone. 50 ft.
Slaty Chalk with thin flints, and creamy Chalk with nodular flints. *Inoceramus mytiloides*. 200 feet.
Grey Chalk without flints. *Holaster subglobosus*. } 100 ft.
Red Chalk. *Belemnites minimus*. }

Remarks are made on the structure of the Chalk, and a short list of fossils is given. W. W.

Blake, Rev. J. F., and W. H. Hudleston. The Coral Rag of Upware. *Geol. Mag.* dec. ii. vol. v. pp. 90–92.

Argues that the presence of *Cidaris florigemma* proves the south pit to be Coral Rag in the restricted sense, as this urchin does not go down to the Lower Calcareous Grit. E. B. T.

B[lake], J. H. Excursion to Corton and Hopton. *Proc. Norwich Geol. Soc.* part i. pp. 37–40.

Notes on the Contorted Drift, Cromer Till, Rootlet-bed, &c.

Blower, Benjamin. The Mersey, Ancient and Modern. 8vo. *Liverpool.* Pp. vii, 88; 26 woodcuts.

The Ancient Mersey, pp. 8–19; Wallesey Pool, 20–22; Lower Pool, 24–32; the Modern Mersey, 33–37; the Estuary, 38–61; Winds, Tides, Channels, 61–65.

Bonney, Prof. T. G. On the Serpentine and associated Igneous Rocks of the Ayrshire Coast. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 769–785; 4 woodcuts.

Describes the serpentine of Balhamie Hill, and the diorites, serpentines, gabbros, porphyrites, and later basaltic dykes along the coast. Comes to the conclusion that the serpentines are intrusive, that there are igneous gabbros of two ages, and that the porphyrites are likewise igneous, thus dissenting from Dr. J. Geikie's views as to the non-igneous character of all these rocks. A. J. J-B.

——. Notes on the Relations of the Igneous Rocks of Arthur's Seat. *Proc. Geol. Assoc.* vol. v. no. 8, pp. 500–511.

Describes the geological structure of the hill, and the two views as to the age of igneous rocks. Doubts the identity of the basalts of Sampson's Ribs, Salisbury Crag, and St. Leonard's Crag, both from position and character, and also that of the basalts of the Lion's Haunch and Duddingston. Concludes that the Sampson's Ribs basalt is not intrusive, but a flow, and that therefore the cone is newer than the rest of the hill. W. W.

——. Note on the Felsite of Bittadon, N. Devon. *Geol. Mag.* dec. ii. vol. v. pp. 207–209, woodcut.

Gives section proving its intrusive character, and notes its structure.

——. The Quartzites of the Bunter Conglomerate. *Geol. Mag.* dec. ii. vol. v. p. 428.

Doubts the Birmingham Drift pebbles being derived from the Bunter.

Brodie, P. B. On the discovery of a large and varied series of Fossil Insects and other associated fossils in the Eocene (Tertiary) Strata of the Isle of Wight. *Proc. Warwick. Field Club*, 1878, pp. 3–12.

Brogden, James. Presidential Address to the South Wales Institute of Engineers. *Trans. S. Wales Inst. Eng.* vol. x. pp. 2–28.

Refers to the mineral districts of South Wales.

Burns, David. On the Intrusion of the Whin Sill. *Trans. N. Engl. Inst. Eng.* vol. xxvii. pp. 73–78, pl. v.

The Whin Sill often has a limestone above, and shale below. During intrusion the heat of the approaching whin would expel gas from the limestone; this would force down the shale, leaving a space along which the whin could easily travel. Gives reasons for believing that the whin generally flowed from below upwards, and in some cases from W. to E. W. T.

Callaway, Dr. Charles. On the Quartzites of Shropshire. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 754–763; 4 woodcuts.

Gives a general description of the rocks in the Wrekin and Church Stretton area, with sections showing the relation of the quartzite to the underlying pre-Cambrian rocks and to the overlying Hollybush Sandstone, and discusses the age of this quartzite. Believes that the quartzite of the Stiper-Stones is of Arenig age, and is underlain by Shineton Shales. A. J. J-B.

——. The Volcanic Rocks of Shropshire. *Geol. Mag.* dec. ii. vol. v. p. 96.

Note concerning bedded volcanic rocks which lie unconformably on beds as old as Lingula Flags, if not Menevian.

——. Recent Discoveries in the Geology of Shropshire.—I. *Mid. Nat.* vol. i. pp. 205–209.

Summary, with list of fossils, of the paper noticed in the GEOLOGICAL RECORD for 1877, p. 6.

Cameron, A. G. Notes on some Peat Deposits at Kildale and West Hartlepool. *Geol. Mag.* dec. ii. vol. v. pp. 351–352.

Champernowne, A. Notes on the Devonians and Old Red Sandstones of North and South Devon. *Geol. Mag.* dec. ii. vol. v. pp. 193–199, pls. v., vi.

From the section at Mudstone Bay considers that the red grits are older than the limestones: seeks for corroborative evidence in N. Devon, and concludes that the Pickwell Down Sandstone is below the M. Devonian. [In vol. vi. p. 125, withdraws some conclusions here stated.] E. B. T.

——. On the Succession of the Palæozoic Deposits of South Devon. *Rep. Brit. Assoc.* for 1877, *Sections*, pp. 66, 67.

Believes that Jukes was right in the main, and that the Devonian rocks are the general equivalents of the L. Carboniferous, and not the marine equivalents of the Old Red. W. T.

Chevalier, Michael. Railway under the English Channel. Translation, by **J. P. Keating,** of Report of the Permanent French Committee to the Association for the construction of a submarine railroad between Calais and Dover (published in 1877). *Proc. Amer. Phil. Soc.* vol. xvii. no. 101, pp. 283–289.

Notes on the methods and results of the exploration of the Channel bed. The Rouen Chalk is persistent almost throughout the proposed line of tunnel, and is very impervious. W. H. D.

Chisholm, [James]. A Geological Section in Park Hill Rise. (*Croydon Microsc. and N. H. Club.*) *Croydon Advertiser and Surrey County Reporter*, Nov. 23.

A description of the Tertiary beds of this part of Croydon.

Clutterbuck, Rev. Robert. The Coprolite Beds at Hinxworth. *Trans. Watford Nat. Hist. Soc.* vol. i. pp. 238, 239.

Collins, J. H. The Hensbarrow Granite District. A Geological Description and a Trade History. 8vo. *Truro.* Pp. viii, 58; map, 5 pls. Price 2*s.* 6*d.*

Part i. General Description, pp. 1–10: Granite, Schorl rock, Elvan; weathering of granite. Pt. ii. China Clay and Stone Industries, 10–27. Pt. iii. Nature and Origin of China Clay and China Stone, 28–36; several analyses given. Pt. iv. Metallic Minerals, 36–46; Tin, Iron, Manganese. Pt. v. Summary and Statistics, 47–56. List of Minerals and of China Clay Works. W. T.

——. Note on the Serpentine of Duporth, in St. Austell Bay, Cornwall. *Rep. Brit. Assoc.* for 1877, *Sections*, p. 68. [Abstract of a paper noticed in the GEOLOGICAL RECORD for 1877, p. 198.]

——. On the Drift of Plymouth Hoe. *Rep. Brit. Assoc.* for 1877, *Sections*, p. 68.

Gravel, with Rhinoceros, Elephant, &c. Probably of comparatively recent origin; not glacial nor a raised beach.

——. On the Trelissick Elvan, with a proposed Classification of the Cornish Elvans. *Trans. R. Geol. Soc. Cornwall*, vol. ix. pt. iv. pp. 221–228, coloured plate. (Entered by mistake in the GEOLOGICAL RECORD for 1877, p. 7.)

The dyke runs N. and S., and is known for about 12 miles. The rock is composed of brown mica in a quartzo-felspathic base. Proposes to divide Elvans or quartzo-felspathic dykes into three varieties:—*Elvanyte*, containing many crystals of quartz and orthoclase; *Trelaveryte*, distinct crystals of quartz, felspar, or mica, very rare; *Trelissickyte*, many granules of quartz and a large number of crystals of mica. The Trelissick Elvan contains only 48 per cent. of silica, whereas the other varieties have more than 70. C. L. N. F.

Corder, Henry. Notes on a Freshwater Deposit at Chignal St. James', near Chelmsford. [Brief Abstract.] *Proc. Norwich Geol. Soc.* pt. i. p. 31.

Crosskey, Rev. H. W. Fifth Report of the Committee appointed for the purpose of recording the position, height above the sea, lithological characters, size, and origin of the Erratic Blocks of England, Wales, and Ireland, reporting other matters of interest connected with the same, and taking measures for their preservation. *Rep. Brit. Assoc.* for 1877, pp. 81–90.

Describes boulders in Denbighshire, Cheshire, Warwickshire, Staffordshire, Salop, Herts, S. Devon, Leicestershire.

——. Note on some Fossiliferous Clay at Wolverhampton. *Mid. Nat.* vol. i. p. 298.

Crowfoot, W. M., and E. T. Dowson. List of Fossils from the Norwich Crag at Aldeby. *Proc. Norwich Geol. Soc.* pt. i. pp. 24–27.

Chiefly Mollusca (74 sp.).

Cudworth, W. J. Submarine Forests. *Nat. Hist. Journ.* vol. ii. pp. 28, 29.

On intra-tidal and submarine forests at Redcar and Hartlepool.

Dakyns, J. R. On a base to the Carboniferous Rocks in Teesdale. *Proc. Geol. Soc. W. Riding Yorksh.* n. s. vol. i. pt. iv. pp. 239–242, pl. ix. (section).

Describes two sections below Cronkley. In one the Whin Sill lies upon an altered Carboniferous limestone, below which are alternations of shale, sandy beds, and limestone, all apparently altered, at the base of which is about a foot of breccia. In the second section are found beds of hardened shale traversed by dykes of mica-trap, like those found in the Kendal country, which seem to be confined to the Silurian rocks. Supposes that the breccia may form the base of the Carboniferous series, reposing upon Silurian rocks. J. P. D.

Davies, W. On a collection of Pleistocene Mammals dredged off the Eastern Coast. *Geol. Mag.* dec. ii. vol. v. pp. 97–100, 443, 444, pl. xii.

Notes on a collection of 300 specimens (Postglacial) from near the Dogger Bank. One Iguanodon vertebra was dredged up with them.

Davis, J. W. Unconformability of the Permian Limestone to the Red Rocks west of its Escarpment in Central Yorkshire. *Proc. Geol. Soc. W. R. Yorksh.* n. s. vol. i. pt. iv. pp. 280–308.

Notes previous works on the subject, giving abstracts of some. Describes the Millstone Grit, Coal Measures, and Permian Limestone, showing the unconformity of the last to the others. W. H. D.

——. Junction of the Silurian Rocks with the overlying Mountain Limestone, at Moughton Fell, in Ribblesdale. *Proc. Geol. Soc. W.*

Riding Yorksh. n. s. vol. i. pt. iv. pp. 309, 310; photograph published separately.

The junction of Horton Flagstones, highly inclined, with the horizontal Carboniferous Limestones is well shown. Other junction-sections are referred to. The pebbly limestone at the junction is not Old Red Sandstone. W. H. D.

Davis, J. W. The Physical Forces which have caused the present configuration of the Valley of the Calder, in Yorkshire. *Geol. Mag.* dec. ii. vol. v. pp. 500–508, woodcut.

Most of the 400 square miles drained by the Calder consists of Millstone Grit and L. Coal Measures.

——. Ichthyography of the Northern Part of the West Riding Coalfield. [*Trans.*] *Midland Inst. Eng.* [vol. 6], pp. 127–145; discussion, pp. 159–167.

Gives a general account of fossil ichthyology and of the Yorkshire Coal Measures, with a list of the fish-remains. The same genera and species occur as a rule throughout: "there is no evidence of the advent of new species." W. W.

Davis, J. W., and F. A. Lees. West Yorkshire: an account of its Geology, Physical Geography, Climatology, and Botany. 8vo. *London.* Pp. xl, 414; 2 maps (scale 4 miles to 1 inch; Geological and River Basins); 21 plates (geol. sketches and sections). Price 21*s*.

Pp. xiii–xl. Bibliography. Part. i. Geology (by **J. W. Davis**). Chap. i. Introduction, pp. 3–22; ii. Silurian Period, 23–38; iii. Red Conglomerates, 39–42; iv. Carboniferous Period, 43–170; v. Permian System, 171–185; vi. Triassic System, 186–193; vii. Post-Tertiary Period, 194–228.

Part ii. Physical Geography and Botanical Topography. Chap. i. The Riding as a whole: its Physical Geography and Botany, pp. 231–256. Chaps. ii.–xi., pp. 256–394, describe area by the various river-basins—Lune, Ribble, Mersey, Ure, Nidd, Wharfe, Aire, Calder, Don, Trent. W. T.

Dawkins, Prof. W. B. The Mammoth at Northwich. *Trans. Manch. Geol. Soc.* vol. xv. pt. iii. pp. 55–59.

A tooth found at the New Victoria Salt Co.'s Works under 48 feet of Boulder Clay and 16 feet of sand, a further thickness of 16 feet of sand underlying it. C. E. R.

De Rance, C. E. Coal and Colliery Explosions. *Pop. Sci. Rev.* n. s. vol. ii. pp. 356–367.

Remarks on submerged forests of Lancashire coast, variations of thickness of coal seams and associated beds, composition of gases, and depth of pits. W. T.

——. Note on the Correlation of certain Post-Glacial Deposits in West Lancashire. *Rep. Brit. Assoc.* for 1877, *Sections,* pp. 68, 69.

After the deposition of the U. Boulder Clay, the Ribble cut a valley 180 feet deep out of the Glacial Drift. At the same time the sea was denuding the W. edge of the Drift, and wearing back a lowland plain, on which afterwards grew a forest surrounding the whole of the N.W. of England, the land standing higher than now, after which the outfall of the stream was obstructed, and the growth of peat ensued. A subsidence of 70 feet more followed; then the denudation of the coast-line, which is still in progress. W. T.

De Rance, C. E. On the Lancashire Coal-Fields. *Proc. Geol. Assoc.* vol. v. no. 7, pp. 389–406.

Describes the beds in the following order—Mountain Limestone, Shales with Limestone, L. and U. Yoredale Grits, Kinderscout Grit, Sabden Valley Shales, Third Grit, Haslingden Flags, and Rough Rock, to p. 394, the rest being devoted to the Coal Measures. The M. Coal Measures of the Wigan area are divided into 6 groups. The formation of coal is noticed. W. W.

——. On the Palæozoic and Secondary Rocks of England as a source of Water Supply. *Trans. Manch. Geol. Soc.* vol. xiv. pp. 403–440, plate.

Describes the water-bearing capabilities of the Silurian, Carboniferous, Triassic, and Oolitic rocks; notes the presence of Triassic and Carboniferous rocks beneath the Oolites of Burford, Oxfordshire; and discusses the probable character of the older rocks underlying the London Basin. C. E. R.

——. Third Report of the Committee for Investigating the Circulation of the Underground Waters in the New Red Sandstone and Permian Formations of England, and the quantity and character of the Water supplied to various towns and districts from these formations, including Report on the South Lancashire Wells, by **T. M. Reade**. *Rep. Brit. Assoc.* for 1877, pp. 56–81, pl. ii.

Details of various wells, especially those of Liverpool, with Analyses by **T. M. Reade,** who gives in pl. ii. sections of 19 wells.

——. The Geology of Lancashire. [Lecture to *Wigan Lit. and Sci. Soc.*] *Coll. Guard.* vol. xxxvi. p. 749.

Dewalque, Prof. G. On the Devonian System in England and in Belgium. *Rep. Brit. Assoc.* for 1873, *Sections,* pp. 69, 70.

The Mountain Limestone, at least in part, is represented in N. Devon by the beds of Barnstaple and Pilton. The Old Red Sandstone is a marine formation. W. T.

Dixon, Frederick. The Geology of Sussex; or the Geology and Fossils of the Tertiary and Cretaceous Formations of Sussex. New [2nd] Ed. by **Prof. T. R. Jones.** 4to. *Brighton.* Pp. xxiv, 469; Geol. Map; 65 plates. Price 42*s*.

Much new matter added, and papers by various authors reprinted.

The most important geological additions are:—Chap. i. (pp. 1–13). General sketch of Sussex; Chap. viii. (132–150). Wealden Strata of E. Sussex (both by the **Editor**); Chap. vi. (98–117). Geological Features of Brighton, Lewes, and Newhaven; Chap. vii. (118–131) (both rewritten by the **Editor**). The History of the Sub-Wealden Boring (151–160), by **W. Topley.**

The Palæontology has been revised by the Editor with the assistance of:—**W. Carruthers,** Plants; **H. B. Brady,** Foraminifera; **Prof. P. M. Duncan,** Corals; **F. E. Edwards** (MS. Cat.) and **Dr. H. Woodward,** Bracklesham Shells; **Prof. R. Owen,** Reptiles; **Dr. H. Woodward,** Crustacea; **Sir P. Egerton** and **E. T. Newton,** Fishes.

The Plates are reproduced from Ed. 1 (1850), with the addition of pls. 46–64 from Mantell's 'Fossils of the South Downs' (1822). The new plates are, Geological Map of Sussex (scale 4 miles to an inch) and sections illustrating the Geology of the S.E. of England and the Sub-Wealden Boring, both by **W. Topley.** W. T.

D'Urban, W. S. M. Palæolithic Implements from the Valley of the Axe. *Geol. Mag.* dec. ii. vol. v. pp. 37, 38.

At Broom, in the parish of Hawkchurch, in gravel, at the junction of a tributary with the Axe. The summit of the gravel is about 50 feet above the river, and 150 feet above the sea. W. T.

Dymond, C. W. Notes on the Megalithic Antiquities at Stanton Drew. *Proc. Somerset Archæol. Nat. Hist. Soc.* vol. xxiii. (n. ser. vol. iii.) pt. 2, pp. 30–37.

Notes the composition of the stones, considering some to be New Red Sandstone, but the majority to be a breccia of the Magnesian Limestone [Dolomitic Conglomerate]. W. A. E. U.

Embleton, T. W. [Notice of Specimens of Vegetable Resin (Middletonite) from Yorkshire Coals.] [*Trans.*] *Midland Inst. Eng.* [vol. 6], p. 154.

Note of occurrence.

Evans, F. G. The Cheddar Caves. *Trans. Cardiff Nat. Soc.* vol. ix. pp. 67–72.

Notices caves in general, the formation of stalactites, and the cave discovered at Cheddar in 1838.

Evans, Dr. John. Excursion to Tyler's Hill, Chesham. *Trans. Watford Nat. Hist. Soc.* vol. ii. pt. 3, pp. xxii, xxiii.

Describes Chalk and Tertiary Beds. Gives a section at Tyler's Hill by Prof. Prestwich.

——. Excursion to Hitchin. *Trans. Watford Nat. Hist. Soc.* vol. i. pp. lxi, lxii.

Describes the geology of the neighbourhood.

——. On some Palæolithic Implements found in the Axe Valley. *Rep. Brit. Assoc.* for 1877, *Sections*, p. 116.

Formed of Chert from the Blackdown beds. Found in a gravel-pit at Broom, between Chard Junction and Axminster.

Foster, C. Le Neve. On the Great Flat Lode south of Redruth and Camborne, and on some other Tin-deposits formed by the Alteration of Granite. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 640–653; discussion, p. 658, pl. xxx. (plan and section). [*Brit. Assoc.* 1877.]

Treats of workings S. of the hill Carn Brea. Describes the lode, giving 6 sections. Concludes that the lode and the capel (schorl-rock) are altered rocks, formed by vapours or solutions brought up through fissures in the granite. Like alterations of granite in other districts in Cornwall are noticed. Proposes to enlarge the definition of lode or mineral vein to include masses of the kind described. Gives statistics of output. W. W.

——. On some Tin Stockworks in Cornwall. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 654–659. [Two papers ~~continued,~~ combined see *Rep. Brit. Assoc.* for 1877, p. 70.]

Describes 4 of these, which are large masses of rock impregnated with ores or intersected by many veins, at Wheal Prosper and Michell, Mulberry Mine, Minear Downs, and Carrigan. W. W.

Gardner, J. S. How were the Eocenes of England deposited? *Pop. Sci. Rev.* n. s. vol. ii. pp. 282–292.

Sketches the succession and character of the Eocene Beds. During their deposition the areas of the English and St. George's Channels were dry land dividing the Eocene sea. Rising land between England and N. America shut off the Arctic current and caused a warm climate (London Clay). The fluvio-marine beds were deposited at the mouth of a river from the W. The delta constantly changed: at first it occupied S.E. England (E. part of London Basin); it afterwards shifted to the S. (Hampshire Basin). The land was to the W., probably now represented by the great submarine ridge down the Atlantic. W. T.

Garner, Robert. Professor Edward Forbes and his Country. *Mid. Nat.* vol. i. pp. 67–70, 90–94.

Contains a notice of the geology of the Isle of Man.

Geikie, Prof. Archibald. On the Old Red Sandstone of Western Europe.—Part. I. *Trans. R. Soc. Edin.* vol. xxviii. pp. 345–452, pl. xxii. (11 vertical sections and horizontal diagram).

Gives a history of the literature of the Old Red Sandstone. Describes basins of deposits in the British area, dividing them as:—Lake Orcadie; L. Caledonia, or the Mid-Scottish Basin; L. Cheviot; The Welsh Lake; Lake of Lorne. Lake Orcadie only is described, in 4 districts:—Caithness and Sutherland; Orkney Islands; Shetland Islands; Basin of the Northern Firths. The N. of Caithness and the Orkney Islands represent the deeper parts or the more open waters; the other districts contain the littoral accumulations. The Old Red of Caithness, 16,200 feet thick, is the representative of the Lower Old

Red of other districts. There is no middle division; the palæontological and lithological differences are explained by isolation and differences in the condition of deposit. On pp. 449, 450 there is a Note on the Volcanic Rocks of Shetland. The *Appendix* gives tables of the vertical range of fossils of Caithness (chiefly from **C. W. Peach**), and a List of Fishes of the Lower Old Red of N. Scotland (revised by **Dr. Traquair**). W. T.

Geikie, Prof. Archibald. The Old Man of Hoy. *Geol. Mag.* dec. ii. vol. v. pp. 49–54, pl. ii. (view).

An isolated rock, 600 feet high, off the S.W. coast of Orkney. The base is Caithness Flagstone, overlain by a bed of ash and lava of U. Old Red age. Over this comes the great mass of the U. Old Red. The marine denudation of the district is described. W. T.

Geikie, Dr. James. On the Glacial Phenomena of the Long Island or Outer Hebrides. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 819–870; 11 woodcuts and tinted map.

Describes the physical features, glaciation, and glacial deposits of the following islands:—Lewis, Harris, N. Uist, Benbecula, S. Uist, Barra, and neighbouring islands. Concludes that the glaciation was produced by an ice-sheet of great thickness coming from the mainland and flowing to the N.W. Explains the absence of boulders derived from the mainland on the supposition that the undercurrents of the ice carried them N.E. and S.W., and accounts for the restriction of the shelly clays to the N. part of Lewis. The chart shows the depth of soundings and the direction of glacial striæ. A. J. J-B.

Gibson, Jabez [the late]. Well Boring at Saffron Walden. Extract of a letter . . . . about 1830. *Proc. Norwich Geol. Soc.* pt. i. pp. 28–30.

To a depth of 1013 feet, through alluvial gravel, Cretaceous, and ? Oolitic beds.

Green, Prof. A. H. Explanation of Quarter Sheet 87 S.W. of the One-inch Geological Survey Map of England, illustrating the Geology of the neighbourhood of Barnsley. *Geological Survey Memoir.* 8vo. *London.* Pp. 17. Price 9*d.*

Describes the Coal Measures in some detail: lithological description, pp. 4–13; lie of the rocks, 13–17. The Permian and Drift are briefly noticed. W. T.

Green, Prof. A. H., R. Russell, J. R. Dakyns, [Rev.] J. C. Ward, C. F. Strangways, W. H. Dalton, and **T. V. Holmes.** The Geology of the Yorkshire Coalfield. [Edited by **Prof. Green.**] *Geological Survey Memoir.* Pp. xiii, 824; 27 plates (view and sections) and 125 cuts. [Though dated 1878, not really published until 1879; see last page.] 8vo. *London.* Price 42*s.*

The Introductory Chapter, pp. 1–11, describes the district and the method of carrying on the survey of it. Chap. ii. Lithological Description of the Rocks, gives a general account of the Carboniferous

Series, pp. 11–26; a detailed account of the Millstone Grit (with its subdivisions) and Yoredale Rocks, by districts, pp. 27–74; a general sketch of the Coal Measures, noticing the chief beds of coal, sandstone, &c., pp. 75–84; details of the L. Coal Measures, pp. 85–227; details of the M. Coal Measures, pp. 228–486. Chap. iii. Present Position and Lie of the Rocks, pp. 487–773, describes the geological structure, disturbances, &c., under 38 districts. Chap. iv. Glacial, River, and other Superficial Deposits, pp. 773–785. An Appendix, pp. 786–806, gives a chronological list of 361 works on the geology of the district. The Index contains the names of all the coals and ironstones referred to. W. W.

Griffith, A. F. On a Flint Implement from the Barnwell Gravel. *Geol. Mag.* dec. ii. vol. v. pp. 400–403, woodcut.

Occurrence of a Palæolithic implement with remains of mammoth, hippopotamus, rhinoceros, &c., at Cambridge.

Grove, W. B. Structure of Sand-Hills. *Sci. Goss.* No. 158, pp. 29, 30; 2 woodcuts.

Describes the section of a sand-dune in Lancashire, discusses the term false-bedding, and distinguishes between irregular bedding and diagonal stratification. A. J. J-B.

Guise, Sir W. V. Annual Address. *Proc. Cotteswold Club*, vol. vii. pp. 1–15.

Contains notes on the field-meetings, and a record of observations by **Dr. T. Wright** on the Physiography of the Severn Valley and the structure of the Cotteswold Hills (pp. 4–6). H. B. W.

Gunn, John. Notes on the Red Chalk of Hunstanton. (Abstract.) *Proc. Norwich Geol. Soc.* pt. i. p. 23.

This bed derives most of its fossils from the denudation of the Gault and Greensand, and owes its colour to the decomposition of glauconitic particles. H. B. W.

Gunn, William, and C. T. Clough. Discovery of Silurian Beds in Teesdale. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 27–34, sketch map.

Describe the disturbance by which the lowest beds are brought up in the dale, near the old Pencil Mill at Cronkley. These consist of soft shales, and reasons are given for considering them to be older than the Carboniferous. They are overlain by thick conglomerates, made up mainly of quartz and clay-slate pebbles; and these form the base of the Carboniferous series. A. J. J-B.

Hall, T. M. A Sketch of the Geology of Devonshire, in White's "History, Gazetteer, and Directory" of the County. Pp. 19. 8vo. *Sheffield.*

Contains notices of the History and Literature. Describes Metamorphic, Devonian (with lists of principal fossils), Carboniferous (with lists of fossils), Granite, Triassic, Cretaceous, Miocene, and Post-Tertiary Rocks; Caves and their Deposits; Raised Beaches and Submarine Forests. H. B. W.

Hall, T. M. The late Prof. Phillips on the N. Devon Rocks; with an introductory Note. *Geol. Mag.* dec. ii. vol. v. pp. 305–310.

Reprint, from a N. Devon newspaper, of an outdoor address to an excursion party.

Harmer, F. W. Address to the Members of the Norfolk and Norwich Naturalists' Society, March 26th, 1878. *Trans. Norfolk Nat. Soc.* vol. ii. pp. 355–376.

Notes a paper by Mr. H. Norton on *Hydrobia marginata* as a geological test of climate (p. 357). Discusses the geological evidence of the antiquity of man, more especially the discoveries of Mr. Skertchly at Brandon (pp. 359–366). H. B. W.

——. *Tellina Balthica* and the Norwich Crag. *Trans. Norfolk Nat. Soc.* vol. ii. pp. 377–380.

A record of *T. Balthica* (*solidula*) from Postwick originated in a misprint. This species enables us, as does no other species, to separate most clearly the Glacial deposits from the Crag, its occurrence in which latter has never been authenticated. H. B. W.

Harrison, William. Geology. *Trans. Barrow Field Club*, vol. 2, pp. 53–59.

A general sketch, with reference to the locality.

Harrison, W. J. Geology of the Counties of England. West Riding of Yorkshire. From Kelly's *Post-Office Directory*.

Describes the Silurian, Old Red Sandstone, Carboniferous, Permian, Triassic, Glacial, and Postglacial Beds, indicating modes of origin, &c. Notes the occurrence of traces of prehistoric man. W. H. D.

——. The Geology of Kent. The Geology of Surrey. The Geology of Sussex. Kelly's *Post-Office Directory of the Six Home Counties*, vol. ii. pp. 1242, 1243, 2045, 2046, 2815, 2816.

A sketch of the geology of each county.

——. Digging out a Boulder. *Mid. Nat.* vol. i. pp. 153–155.

A boulder of Mt.-Sorrel granite, weighing about 15 tons, 2¾ miles N.E. of Leicester, in Drift.

——. A Scheme for the Examination of the Glacial Deposits of the Midland Counties of England. *Mid. Nat.* vol. i. pp. 242–245.

——. Rainwash. *Mid. Nat.* vol. i. pp. 273, 274.

An account of a rainwash deposit on the limestone of Middleton Moor, Derbyshire. It consists of silicate of alumina, &c., which occurred in the limestone, the carbonate of lime having been dissolved away. T. V. H.

——. Borings in Limestone Rocks. *Mid. Nat.* vol. i. p. 309.

The discovery of burrows or "lithodomous perforations" in the

Druidical Stones of Arbor Low, Derbyshire, seems to show that in this and other cases they were made by the common land-snail. T. V. H.

Harrison, W. J. On the Study of Local Geology, with Illustrations from Leicestershire. [Free Evening Lectures of Science and Art Department.] *London.*

Hicks, Henry. On some Pre-Cambrian (Dimetian and Pebidian) Rocks in Caernarvonshire. With a Note by **T. Davies.** *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 147–152.

Gives reasons for placing the so-called altered Cambrian of Moel Tryfaen, and all the rocks coloured on the Geological Survey Map as felspar and porphyry to the W. and S.W. of Moel Tryfaen and Tal-y-sarn, with the Pre-Cambrian series, and shows that they are the same as the rocks, similarly coloured, near Llyn Padarn, the basement beds of the Cambrian being in every case conglomerates. A. J. J-B.

——. Additional Notes on the Dimetian and Pebidian Rocks of Pembrokeshire; with an Appendix by **T. Davies.** *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 153–169, plate of sections.

Describes the chief varieties of rocks which make up the Dimetian series, and the Pebidian rocks as exhibited in three sections:—1. From Ramsay Sound to St. Davids; 2. From St. Davids to near Solva; 3. From Llanhowel to Newgale. Sketches the probable physical conditions of the two periods. The Appendix is on microscopic structure. A. J. J-B.

——. On the Metamorphic and Overlying Rocks in the Neighbourhood of Loch Maree. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 811–818; 3 woodcuts.

Notices conflicting views regarding the position of the rocks in this neighbourhood, and advances a new interpretation of the section on the N. side of the lake, describing Pre-Cambrian, Cambrian, and Silurian beds. A. J. J-B.

Hill, Rev. E., and Prof. T. G. Bonney. On the Precarboniferous Rocks of Charnwood Forest. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 199–239, pl. x. (map), 2 woodcuts.

Describe the microscopic structure of the Clastic rocks, which may be classed as:—1. Quartzites; 2. Slaty rocks; 3. Coarser fragmental rocks; 4. Highly altered rocks; 5. Fragments from Breccias. The Igneous rocks are described, as under:—1. The S. Syenite; 2. The N. Syenite; 3. The Granite of the Quorndon district; 4. The later intrusive rocks. Indicate probable outliers of the Charnwood Forest rocks, mention the chief faults in the area, and discuss the age of the clastic (Pre-Cambrian ?) and igneous rocks. A. J. J-B.

Hippisley, H. E. Somersetshire Coal Measures. *Geol. Mag.* dec. ii. vol. v. pp. 345–350.

Notices difficulties in correlation. Believes that the Radstock series exists in this area.

Hodgson, the late Miss E. Visits to Trap Dykes. *Trans. Barrow Field Club*, vol. 2, pp. 89–94.
Describes dykes in the Lake District.

Hopkinson, John. Excursion to Tyler's Hill, Chesham. *Proc. Geol. Assoc.* vol. v. no. 8, pp. 498, 499.
An account of a section of Eocene beds over Chalk.

——. Excursion to Hertford and Ware. *Proc. Geol. Assoc.* vol. v. no. 8, pp. 519–522.
The sections of the Tertiary beds and the gravels explained by **Prof. Morris.**

——. Reports of the Field Meetings of the Watford Natural History Society in 1877. *Trans. Watford Nat. Hist. Soc.* vol. i. pt. 9, pp. lvii–lxiv.
Stanmore Common, Pinner, Hitchin, Cassiobury Park.

Hudleston, W. H. Excursion to Chipping Norton. *Proc. Geol. Assoc.* vol. v. no. 7, pp. 378–389.
An account of the sections on the new railway between Chipping Norton and Hook Norton, and of some pits near the former place. The beds are Great and Inferior Oolite. Details are given of Lunglin-Bridge cutting, Cetiosaurus Quarry, Chipping Norton, and quarries on Chudlington Down, all showing two calcareous masses, separated by clay and marl. W. W.

——. The Yorkshire Oolites.—Part ii. Section 2. The Coralline Oolites, Coral Rag, and Supracoralline Beds. *Proc. Geol. Assoc.* vol. v. no. 8, pp. 407–494, pls. iii.–vi. (map and fossils), folding table, woodcuts.
The table is a generalized scheme of the beds, noting the topographical divisions, localities, lithology, and characteristic fossils. The headings are as follows:—i. Lower Limestone and Passage Beds; ii. Group of the Coralline Oolite (including the M. Calc. Grit), with a map of the country round Malton, and remarks on the formation of Oolite; iii. Coral Rag, with remarks on silicification; iv. Supracoralline Beds. Throughout the above there are details of sections and lists of fossils. v. Stratigraphy and Physiography, with details of a boring at Old Malton, 468 feet deep; vi. Palæontology, with Notes on the Fossils figured (none being new species), and a Table of the Fossils in the Coralline Rocks of Yorkshire, giving their range, localities, and general abundance. W. W.

Hughes, Prof. T. McK. On the Pre-Cambrian Rocks of Bangor; with a note on the microscopic structure of some Welsh Rocks, by **Prof. T. G. Bonney.** *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 137–146, woodcut.
States Sedgwick's views on the rocks of this district, and describes a section from the Menai Straits through Bangor, in which the basement-

bed of the Cambrian is a coarse grit or conglomerate. Below this, near Bangor, are schists and felsites; but near Llanddeiniolen there is quartz-felsite below. The Bangor beds are correlated with the Pebidian, and the quartz-felsite with the Dimetian. **Prof. Bonney** describes the structure of 9 specimens, mostly volcanic. A. J. J-B.

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Hull, Prof. Edward. The Physical Geology and Geography of Ireland. 8vo. *London*. Pp. xvi, 291; 2 coloured maps (geology and glaciation), 26 woodcuts. Price 7*s*.

Part i. *Geological Formations*. (pp. 1–49) Palæozoic; (50–58) Mesozoic; (59–77) Tertiary (including volcanic rocks); (78–95) Drift; (96–106) Post-Glacial; (107–116) Raised Beaches, River Terraces, &c. Part ii. *Physical Geography*. (117–122) Mountains; (123–148) Descriptions of the various Highlands; (149–167) Origin of the Central Plain; (168–184) Origin of River Valleys; (185–202) Origin of Lakes; (203–207) Underground River-Channels; (208–210) Bays and Inlets of Limestone Districts. Part iii. *Glaciation* (211–266). (267–272) Extinct Mammalia. Appendix I. (273–275) List of Authors quoted; II. (276–286) Lists of Fossils; III. (281, 282) Geological Maps. W. T.

——. A possible explanation of the North Devon Section. *Geol. Mag.* dec. ii. vol. v. pp. 529-532.

Since the Dingle beds, probably U. Silurian, are separated by a wide gap from the true Old Red Sandstone in Ireland, probably the N. Devon Foreland Sandstones, Lynton and Ilfracombe groups, represent those beds missing in Ireland. The Pickwell Down Sandstones would represent the S. Irish Old Red Sandstone. E. B. T.

Hutchinson, Rev. T. N. On certain corroded Limestone Masses in Yorkshire. *Rep. Rugby School Nat. Hist. Soc.* for 1877, pp. 29-32, pls. ii., iii.

A description of limestone beds on the N. side of Ingleborough. They lie nearly flat; and their surface consists of a series of isolated blocks, separated by chasms and fissures a few feet or inches in depth, which have been formed along the lines of jointing by the action of rain. T. V. H.

Irvine, D. R. Explanatory Memoir to accompany Sheet 4 of the One-inch Map of the Geological Survey of Scotland. With Palæontological Notes and List of Fossils by **Robert Etheridge, Jun.** Pp. 29. *Geological Survey Memoir*. 8vo. Price 9*d*.

General description of district. Formations:—Recent and Post-Tertiary; Drift Series; Lower Silurian, Llandeilo (including the Carsphairn Group, Upper or Lead Hills Black Shale Group, Lowther Group, Dalveen Group, Lower or Moffat Black Shale Group, Ardwell Group); Metamorphic rocks; Basaltic Dykes (Miocene); Dioritic, Felsitic, and Granitic rocks, associated with L. Silurian; veins of Galena and Zinc-blende. J. S. G-W.

Jenkinson, H. I. Practical Guide to the Isle of Man. Ed. 2. 8vo. *London*. Price 5*s*.

Mineralogy by **B. M. Wright, Jun.**, pp. 217–238. Geology, pp. 239–248.

——. Practical Guide to North Wales. 8vo. *London*. Price 6*s*. 6*d*.

Geology, pp. lxi–lxxxi. Mines and Minerals by **D. C. Davies**, pp. c–cxi.

Jennings, J. H. On the Origin of a quartzite boulder from the Bunter Conglomerate, Nottingham. *Geol. Mag.* dec. ii. vol. v. p. 239.

A pebble from Bunter Conglomerate contained *Orthis redux*, which occurs at Budleigh Salterton.

Jones, R. W. The Old Red Sandstone of South Wales. *Trans. Cardiff Nat. Soc.* vol. ix. pp. 142–145.

Notes the chief characters, fossils, and method of formation of the Old Red Sandstone. Mentions the occurrence of Silurian rocks, extending from Penylan to Rhymney Bridge, near Cardiff. H. B. W.

Jones, Prof. T. R. Sand-worn pebbles in the Wealden of Sussex. *Geol. Mag.* dec. ii. vol. v. p. 287.

Detects the action of blown sand in polishing and striating pebbles from the conglomerate in the U. Tunbridge Wells Sandstone, Cuckfield. E. B. T.

Jordan, H. K. The Pencoed, Mynydd-y-Gaer, and Gilfach-Goch Mineral Districts. Discussion. *Trans. S. Wales Inst. Eng.* vol. x. pp. 38–41, 73–80, 160–173, 263–266. [The paper itself is noticed in the GEOLOGICAL RECORD for 1876, p. 20.]

Judd, Prof. J. W. The Secondary Rocks of Scotland. Third Paper. The Strata of the Western Coast and Islands. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 660–743, pl. xxxi. (geol. map and section); 11 woodcuts.

1. Introduction and History of previous opinion; 2. Distribution and Physical Relations of the Secondary strata of the W. Highlands; 3. General characters of the strata; 4. Description of the following formations—Carboniferous, Poikilitic, Jurassic (including Infralias, L., M., and U. Lias, L. Oolite, Estuarine series, and Oxford Clay), Cretaceous (including U. Greensand and the strata representing the Chalk). A table of the strata, the localities where seen, their characteristic fossils, and their English equivalents is given at p. 736. A. J. J-B.

Jukes-Browne, A. J. The Post-Tertiary Deposits of Cambridgeshire, being The Sedgwick Prize Essay for 1876. 8vo. *Cambridge* and *London*. Pp. 85; 7 woodcuts. Price 2*s*. 6*d*.

Chap. i. General history of opinions respecting the drift; ii. Literature of the subject (brief abstract of publications); iii. General Physical Features of the County and description of the Glacial Deposits; iv. Hill gravels; v. Valley gravels of the early river system (these correspond with the direction of the valleys in their upper parts; but in the lower parts they strike across the existing valley); vi. Valley gravels of the present River System; vii. Correlation of the Cambridgeshire Drifts with those of the Eastern Counties. Conclusion (pp. 80–83). All the deposits are U. Glacial or newer. The gravels W. of the Chalk escarpment are not M. Glacial. The Hill (or Plateaux) gravels are probably Marine, and should be classed with the U. Glacial. W. T.

Keeping, Prof. Walter. Notes on the Geology of the Neighbourhood of Aberystwith. *Geol. Mag.* dec. ii. vol. v. pp. 532–547, woodcut.

Describes the section from Aberystwith to the Devil's Bridge. Makes Aberystwith the centre of an anticlinal; and the lowest beds there are considered to be L. Bala (Sedgwick). E. B. T.

Kinahan, G. H. Manual of the Geology of Ireland. 8vo. *London.* Pp. xx, 444; geological map, 8 plates (fossils, views, &c.), 26 woodcuts.

Section i. Sedimentary Rocks, pp. 11–173, from Cambrian to Pliocene; ii. Metamorphic and Eruptive Rocks, pp. 175–222, a chapter being given to their chronological classification; iii. Superficial Accumulations, pp. 223–298, describes Drifts, Glaciation, Raised Beaches, Submerged Forests, Peat-bogs, Soils; iv. Physical Features, pp. 299–337, with remarks on their origin, &c.; v. Economical Products, pp. 339–407, with a list of mineral localities, and remarks on water-supply. W. W.

——. Land Plants in the Irish Silurians. *Geol. Mag.* dec. ii. vol. v. pp. 398–400.

In the Glengariff Grits. Discusses the age of these beds.

——. Irish Drift. *Land and Water,* January 19. [Reprint of a paper noticed in the GEOLOGICAL RECORD for 1877, p. 24.]

King, H. D. An account of Dr. Barrois' Researches on the Chalk of Norfolk. *Proc. Norwich Geol. Soc.* pt. i. pp. 35–37.

Kitton, F. William Arderon, F.R.S., an old Norwich Naturalist. *Trans. Norfolk Nat. Soc.* vol. ii. pp. 429–458.

Reprints some of his notes on the geology of Norfolk.

Lamplugh, G. W. On the occurrence of Marine Shells in the Boulder Clay of Bridlington and elsewhere on the Yorkshire coast. *Geol. Mag,* dec. ii. vol. v. pp. 509–517, 573.

A list of two dozen species from the blue and the purple clay is given (fragments were found as far N. as Whitby), many of them "Bridlington Crag" shells. E. B. T.

Lapworth, Charles. The Moffat Series. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 240–346, pls. xi.–xiii. (maps and sections), 32 woodcuts.

Indicates the general characters of the Lower Silurian rocks of S. Scotland, and refers to previous publications. Gives detailed descriptions of many sections near Moffat, and a summary of the observations and conclusions regarding the physical relations of the Moffat Series. The palæontological evidence is considered, upon which the following subdivisions are founded:—Glenkiln Shales; Hartfell Shales, Lower in 3 zones, Upper in 2 zones; Birkhill Shales, Lower in 3 zones, Upper in 3 zones. The zones are characterized by different species of *Graptolites*, and the vertical distribution of the fossils is shown in a table. The 3 divisions are severally compared with the Llandeilo, Bala, and L. Llandovery groups; and though the members of the Moffat Series differ much in thickness and lithological character from the same beds in Wales, this is explained by the rapid N.W. attenuation of the Cambro-Silurian rocks, as traced through the Lake District and S. Scotland into Norway and Sweden. A. J. J-B.

Law, Robert. On bones of pleistocene animals found in a broken-up cave, in a quarry near Matlock, Derbyshire. *Trans. Manch. Geol. Soc.* vol. xv. pt. iii. pp. 52–55.

Contained *Rhinoceros tichorhinus*, Cave Hyæna, Bear, Reindeer, Fox, Red deer, and Bison, carried into the cave by floods from the River Derwent. C. E. R.

Laws, Ed. On the proposed Exploration of certain Caves in the neighbourhood of Tenby. *Rep. Brit. Assoc.* for 1877, *Sections*, p. 118.

Bones of hyæna, bear, rhinoceros, &c. have been found.

Lebour, [Prof.] G. A. On the occurrence of Pebbles in Carboniferous Shale in Westmoreland. *Rep. Brit. Assoc.* for 1877, *Sections*, p. 72.

Quartzite pebbles at Augill (printed Angill).

——. Notes on the Age of the Cheviot Rocks. *Rep. Brit. Assoc.* for 1877, *Sections*, pp. 72, 73.

The mass of the Cheviots consists of porphyrites passing into granite and syenite, with ashes and dolerite. These are of Devonian age. Later igneous eruptions of dolerite in the S. part of the Cheviots are probably of Tuedian and Bernician age. W. T.

——. Outlines of the Geology of Northumberland. 8vo. *Newcastle-on-Tyne* and *London*. Pp. iv, 75. Price 2*s*. 6*d*.

Describes the formations, in descending order—Recent and Sub-Recent Deposits, Drift, Permian, Coal Measures, Gannister Series and Millstone Grit, Carboniferous Limestone or Bernician Series, Tuedian Beds, Silurian, Igneous Rocks, Dykes, Whin Sill, Cheviots. Chap. xix. gives lists of Fossils. Marine Fossils occur in the Gannister Series.

The Red Sandstone and Conglomerate of Roddam Dene, usually called Old Red, are here classed with the Tuedian. W. T.

Lebour, [Prof.] G. A. [Visit to Stonecroft and Greyside Lead Mines.] (Reprinted from Excursion Circular, Oct. 1877.) *Trans. N. Engl. Inst. Min. Eng.* vol. xxvii. pp. 17, 18.

A sketch of the geological features of the neighbourhood.

Lecornu, Léon. Mémoire sur l'exploitation de la houille dans le Sud du Pays de Galles. [Coal-winning in S. Wales.] *Ann. Mines*, sér. 7, t. xiv. pp. 319–383, pl. x.

1. Order of the seams, lie of the beds, faults, useful products, qualities of coal; 2. Modes of working; 3. Statistical and economic.

Lobley, J. L. Excursion to Pinner. *Trans. Watford Nat. Hist. Soc.* vol. i. pt. 9, pp. lviii, lix.

Describes the geology of the neighbourhood.

Lucas, Joseph. The Hydrogeology of Middlesex and part of Hertfordshire, showing the Original Position of the Artesian Plane, and its Present Position over the Metropolitan Area of Depression, as lowered by pumping. *Trans. Inst. Surv.* vol. x. pt. xi. pp. 279–301; Discussion, pp. 301–316; 4 tables.

Notices the anticlinal and synclinal lines of that part of the London Basin in question, and the flow of water into the Chalk and the Tertiary sands. Notes the various overflowing and other deep wells, and their evidence as to contours of water-levels. Contrasts the former areas of overflow with the present. The tables are of wells, with their water-levels, &c. In discussion **S. C. Homersham** questioned the permanent lowering of the water-level in the Chalk; **Prof. Ansted** noticed the movement of water in the Chalk; **Rev. J. C. Clutterbuck** supported the author; **B. Latham** questioned the existence of some of the anticlinal and synclinal lines. W. W.

——. Hydrogeological Survey. Part II. Explanation accompanying Sheet 1, Second Edition, and Sheet 2. Pp. 7. 4to. *London.* Price 6*d.*

Explanations of Maps of parts of Middlesex, Surrey, and Kent, and of parts of Middlesex, Herts, and Essex.

Lucy, W. C. On the extension of the Northern Drift and Boulder Clay over the Cotteswold Range. *Proc. Cotteswold Club,* vol. vii. pp. 50–61.

Notices the presence of Drift Clay nearly all over the Cotteswold range, varying in thickness from a few inches to three feet, and often in pockets. The amount of silica in this clay is about 70 p. c., as shown by analysis of specimens from 5 places. Various Drift gravels are noticed. Certain furrows in the Old Red Sandstone and in the Lias are alluded to as evidence of ice action. H. B. W.

McDakin, Captain. [Structure of the sea-cliffs at Folkestone.] 20 *Rep. E. Kent Nat. Hist. Soc.* p. 29.

——. [Fossil Wood from Eastwear Bay, near Folkestone.] 20 *Rep. E. Kent Nat. Hist. Soc.* pp. 35, 36.
At junction of Gault and L. Greensand, and highly phosphatic.

——. [Fossils from the Bognor beds.] 20 *Rep. E. Kent Nat. Hist. Soc.* pp. 44, 45.

Mackintosh, D. [Sections in the Drift, and Terminal Curvatures in S.W. of England.] *Geol. Mag.* dec. ii. vol. v. pp. 190, 191, 331, 332.
Thinks the curvatures due to land-ice or floating ice.

McMurtrie, James. On the Pumping arrangements of the Radstock Collieries, with an account of the Sinking and Tubbing of a Pumping Shaft at Tyning Pit, Radstock. *Proc. S. Wales Inst. Eng.* vol. xi. pp. 66-84, pls. 3-8; discussion, pp. 124-128.
Explains the usual mode of dealing with the water-bearing beds overlying the greater part of the Somersetshire Coalfield. Pl. 4 is a plan of the Radstock Estate, showing the position of the pits and arrangement of the watercourses. Pl. 5 gives the section of strata in the upper part of Tyning Pit, Radstock, showing overlying formations. Pls. 6-8 give sections illustrating the sinking of Tyning pumping shaft through overlying formations. R. B. N

Marr, J. E. On some well-defined Life-zones in the lower part of the Silurian (Sedgwick) of the Lake-district. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 871-885; 2 woodcuts.
Treats of the zones of fossils occurring between the Coniston Limestone and the Coniston Grits, and notes the fact that each fossiliferous formation from the Skiddaw Slates to the Kirkby Moor Flags is characterized by one or more species of the genus *Phacops.* Gives lists of fossils and notes on 4 species of *Phacops.* A. J. J-B.

Maw, George. On an Unconformable Break at the base of the Cambrian rocks near Llanberis. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 764-768, woodcut.
Maintains that an unconformity may be observed in the railway-cutting near Llanberris between the Cambrian Grits and the older slates.

Meyer, C. J. A. Notes respecting Chloritic Marl and Upper Greensand. *Geol. Mag.* dec. ii. vol. v. pp. 547-551.
Maintains the correctness of correlating beds 10 to 12 of his published section and the Warminster beds of Chute Farm with the Chloritic Marl of Ibbetson. E. B. T.

Miall, Prof. L. C. The Geology Natural History and Prehistoric Antiquities of Craven in Yorkshire. Pp. 42. Map and section. Reprinted from the Third Edition of Whitaker's 'History of Craven.' 4to. *Leeds.*
The district consists of L. Coal Measures, Millstone Grit, Yoredale

Rocks, Mountain Limestone, U. and L. Silurian. The denudation, glaciation, mineral veins, physical features, Glacial and River Drifts, geological structure (with lists of fossils), swallow-holes, caves and cave-deposits are described. **W. E. Sheffield** adds a Catalogue of Minerals.
W. H. D.

Mills, M. H. Description of Bearpark Colliery Surface Arrangements. *Trans. Chesterfield Inst. Eng.* vol. v. p. 171.

Plate xxviii. gives a section of strata sunk through at this Durham colliery.

Molyneux, William. On the Occurrence of *Aviculopecten* and other Marine Shells in Deposits associated with Seams of Coal containing Salt Water in the Ashby Coal Field. *Rep. Brit. Assoc.* for 1877, *Sections*, pp. 73, 74.

In the Main Seam of the Colon Park and Linton Colliery and elsewhere. The salt water cannot have been derived from the Keuper; for overlying the coal there are Permian and Bunter beds charged with fresh water. W. T.

Montford, Rev. E. E. The Geology of Derbyshire, pp. 10–18 of Cox's 'Tourists' Guide to Derbyshire.' Pp. viii, 131. 8vo. *London.* 2*s.*

Moore, Charles. Notes on the Palæontology and some of the Physical Conditions of the Meux-Well Deposits. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 914–921; Discussion [on this and Prof. Prestwich's paper], pp. 922, 923.

An account of some of the cores; lists of the fossils from the U. Greensand, Gault, and L. Greensand; and remarks on the extension of Generic Life. The fossils noted are to a great extent microscopic (*Foraminifera* and *Entomostraca*). W. W.

——. The Banwell Bone Caves. *Trans. Cardiff Nat. Soc.* vol. ix. pp. 64–66.

Refers to the upheaval of the Mendip Hills, and thinks that the caverns originated in fissures made during that disturbance. Suggests that these hills may have passed through a glacial period, the ice subsequently melted, and thus streams of water were carried down through the fissures, and bones with them. Notices the remains found. H. B. W.

Mortimer, R. On the Flints of the Chalk of Yorkshire. *Proc. Geol. Assoc.* vol. v. no. 6, pp. 344–354.

A woodcut map shows the areas taken up by Drift (with flinty or flintless chalk beneath), Chalk without flints, Intermediate stage, Chalk with flints, and Speeton Clays. The greatest thickness of the flint-bearing Chalk is 400 feet. Various pits are noticed. The flintless Chalk has been proved to a thickness of 800 feet. Concludes that the flinty and flintless Chalk are contemporaneous in Yorkshire; that the flints were formed after the deposition of the Chalk, by infiltration.
W. W.

Morton, G. H. Section of Drift-beds observed in sinking for water at Aughton, near Ormskirk. *Proc. Liverpool Geol. Soc.* vol. iii. pt. iv. p. 370.

79 feet in all; L. Boulder Clay at the bottom.

——. The Carboniferous Limestone and Millstone Grit of Llangollen. (Continued.) *Proc. Liverpool Geol. Soc.* vol. iii. pt. iv. pp. 371–428.

Describes the limestone of Craignant, Llawnt Oswestry district, Trefonen, Treflach, Dolgoch, Nant Mawr, Porth-y-waen, Llanymynech Hill (including the mineral lodes of the latter district), and Minera, their lithological differences, geographical area, and palæontological contents. C. E. R.

——. The Carboniferous Limestone and Millstone Grit in the Country around Llangollen, N. Wales. *Rep. Brit. Assoc.* for 1877, *Sections*, pp. 74, 75. [Abstract of paper noticed in the GEOLOGICAL RECORD for 1877, p. 30.]

Mott, F. T. Report of the Geological Section. *Rep. Leicester Lit. Phil. Soc.* pp. 25–28.

Notes on Kilby Lime-quarries, Drift and Lias; Bradgate, Cambrian and Syenite; Leicester Gas Works, Postglacial and Trias; and Granite Boulder, Humberstone. W. H. D.

Nolan, Joseph. On the Ancient Volcanic district of Slieve Gullion. *Geol. Mag.* dec. ii. vol. v. pp. 445–449.

The rocks described are micaceous dolerite, quartz-porphyry, and volcanic agglomerate, granite forming the country round.

see Errata p. xxix.

Oldham, T. B. Lists of Rugby Fossils, and Note on the White Lias in the Neighbourhood of Rugby by **T. B. Oldham** and **G. Jones.** *Rep. Rugby School Nat. Hist. Soc.* for 1877, pp. 46–54.

The localities in which the fossils were found are given. They are from the Lias and Drift, and were named by **Mr. R. Etheridge.**

Painter, Rev. W. H. Castleton: its extinct Fauna and Physical Surroundings. *Mid. Nat.* vol. i. pp. 63–67.

Describes Windy Knoll fissure and its fauna; Blue John and Speedwell Mines; the Peak Cavern or Devil's Hole; Cave Dale; a small cave under the Keep of Peveril Castle containing bones (of existing animals and man); Windgates, &c. W. T.

Parke, G. H. On the Occurrence of Vermiculite in England. *Proc. Geol. Soc. W. Riding Yorksh.* n. s. pt. iv. pp. 254–257.

Notices the presence of Vermiculite, in both red and grey granite, in the Boulder Clay of Furness, W. Lancashire; and concludes that the granite-boulders there found have been transported from Labrador by floating ice. Gives analyses, Entered by mistake in the Geo. Record for 1877. page 246. J. P. D.

Parsons, Dr. H. F. The Alluvial Strata of the Lower Ouse Valley.

Proc. Geol. Soc. W. Riding Yorksh. n. s. pt. iv. pp. 214–238, pl. viii. (sections).

Describes many sections in Triassic and Quaternary beds, the general ascending order of the latter being Boulder Clay, Gravel, Laminated Clay, Sand, Peat, Warp. Gives analyses of Warp by **E. Hunter**, and 18 detailed sections of wells and boreholes. W. H. D.

Pattison, S. R. Note on the Carboniferous Coast-line of North Cornwall. *Rep. Brit. Assoc.* for 1877, *Sections*, p. 75.

Describes the Culm Measures from Bude to Boscastle. A thin film of Culm occurs with fragments of plants (*Calamites*, *Sigillaria*, and *Asterophyllites*). At Boscastle, under the Culm strata, is a slaty rock, the "farewell rock" of the Carboniferous, under which are Devonian slates. W. T.

Pengelly, William. The Gorran Beds and Budleigh Salterton Pebbles. *Geol. Mag.* dec. ii. vol. v. pp. 238, 239.

Refers to his writings in 1864 recognizing the identity of fossils in pebbles and in place at Great Cairn and Great Peraver, near Gorran Haven. E. B. T.

——. Literature of Kent's Cavern.—Part IV. *Trans. Devon. Assoc.* vol. x. pp. 141–181.

The object is to compile and edit all that can be collected relating to the cavern, whether in print or in manuscript, from the earliest period to March 1865, when the exploration was begun by the British Association Committee. Parts I.–III. were printed in the *Trans. Devon. Assoc.* for 1868, 1869, and 1871. The present number gives additions collected during the last seven years. T. M. H.

——. The Geology of the North-eastern coast of Paignton. *Trans. Devon. Assoc.* vol. x. pp. 196–202.

Describes the sandstones and conglomerates of the Trias, and the peat-bed, which forms a part of the submerged forest of Torbay.

——. Notes on recent notices of the Geology and Palæontology of Devonshire.—Part V. *Trans. Devon. Assoc.* vol. x. pp. 618–629.

Corrects an error with regard to fish-remains from Mudstone Bay, and errors relating to Kent's Cavern and Brixham Cavern. T. M. H.

——. Thirteenth Report of the Committee for Exploring Kent's Cavern, Devonshire. *Rep. Brit. Assoc.* for 1877, pp. 1–8, pl. 1.

Explorations in the 'Bears' Den' and 'Tortuous Gallery.' In the Bears' Den the bones were almost confined to the uppermost part of the breccia, and mainly to its surface. W. T.

——. Address to Section C, Geology. *Rep. Brit. Assoc.* for 1877, *Sections*, pp. 54–66.

Describes the history of Cavern exploration in Devonshire. The Fissure Caves are those of Oreston, Ash Hole, and Bench; the Tunnel Caves those of Yealm Bridge, Brixham, Kent's Hole, and Ansty's Cove. Only Kent's Hole and the Brixham Caves have been properly explored;

and only these have yielded evidence of Palæolithic man. Oreston only amongst British Caves has yielded remains of *Rhinoceros leptorhinus*. Up to 1877 Kent's Hole only had yielded remains of *Machairodus latidens*; but this is now found in Robin-Hood Cave, Derbyshire.

In Brixham Caves and Kent's Hole the lowest and oldest bed yields remains of bears with flint implements, but no remains of hyæna; this is probably of interglacial if not of preglacial age. Above this lies a layer of stalagmite, which is overlain by the cave-earth containing hyæna remains. Kent's Hole was the home of man, and at other times of the hyæna; but only occasional visits were made by both to Brixham Cave. W. T.

Pennington, Rooke. On a tooth of *Rhinoceros tichorhinus* found at the entrance to the Peak Cavern, Castleton, Derbyshire. *Trans. Manch. Geol. Soc.* vol. xv. part iii. pp. 51, 52.

Probably washed out of a fissure in the limestone, or from a hyæna-cave, by floods, into the Peak river.

Perceval, S. G. *Orthis redux* in Midland Bunter pebbles. *Geol. Mag.* dec. ii. vol. v. p. 333.

Notes the occurrence of this species in Bunter near Birmingham and in the pebbles of the Drift.

Pickering, R. Submerged Forest at St. Bees. *Trans. Cumb. Assoc.* part iii. pp. 109–114.

May be seen between high and low water, and extends below low-water mark. Borings show that it is connected with the stratum seen in the river bed of the valley of St. Bees. It seems to be Post-glacial; and at the time it flourished St. Bees must have been many miles inland. T. V. H.

Plummer, E. Observations on the Glyncorrwg Mineral District from the Avon Valley to the Neath Trough. *Proc. S. Wales Inst. Eng.* vol. x. pp. 335–341, pls. xxix., xxx.

Mentions the valuable seams of coal worked, gives a short description of the faults, and describes the Neath Trough.

——. Observations on the Glyncorrwg Mineral District from the Trough to the Neath Valley. *Proc. S. Wales Inst. Eng.* vol. xi. pp. 20–32; discussion, pp. 32–39, 61–65; 2 plates.

Brief descriptions are given of the Troughs, Faults, and Anticlinals of the neighbourhood (shown on pl. 1). Pl. 2 is a Vertical Section (scale of 60 feet to an inch) showing many coal-seams. Proves that the seams of Rhondda and Neath valleys are identical. R. B. N.

Plunkett, I. On the Exploration of some Caves in the Limestone Hills in Fermanagh. *Rep. Brit. Assoc.* for 1877, *Sections*, p. 76.

Human remains found in cave-earth under thick layers of stalagmite. "In one cavern a human jaw was found, imbedded in glacial clay, and associated with scratched stones." The animal remains are of existing species. W. T.

Prestwich, Prof. J. On the Section of Messrs. Meux & Co.'s Artesian Well in the Tottenham Court Road, with Notices of the Well at Crossness, and of another at Shoreham, Kent; and on the probable range of the Lower Greensand and Palæozoic Rocks under London. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 902–913; 5 woodcuts; Discussion [with that on Mr. Moore's paper], pp. 922, 923.

States the grounds on which the lowermost beds were identified as L. Greensand and U. Devonian; compares the section with borings in the coal-field of Auchy au Bois near Lillers, and points out that, if the strike of the beds were prolonged, it would place the possible continuation of the coal-field a little N. of London. That the L. Greensand is capable of yielding a water supply S. of London is proved by a successful boring at Shoreham, near Sevenoaks. Detailed sections of the wells at Meux's and at Crossness are given. A. J. J-B.

Ramsay, Prof. A. C. The Physical Geology and Geography of Great Britain: A Manual of British Geology. Ed. 5. 8vo. *London.* Pp. xvi, 639; geol. map, many woodcuts. Price 15*s.*

Largely increased, the chief additions being an account of the British formations, their range, characters, and fossils, Chaps. v.–xvii. Chaps. i.–iv. are general; xviii. treats of the structure of Scotland; xix. recapitulates the arrangement of the formations of England; xx. treats of the hill districts of the W. of England and Wales, the Severn Valley, and the escarpment of Secondary rocks, the hills, plains, and valleys of N. England; xxi. is on the origin of escarpments, especially illustrated by those round the Weald; xxii. on Miocene and Pliocene; xxiii.–xxvii. The glacial epoch, movements of land, origin of lakes, fiords, &c.; xxviii. Bone-caves, traces of man, cliff-denudation; xxix. British climates and their causes; xxx. Denudation, escarpments, valleys; xxxi. River valleys and gravels; xxxii. Waters; xxxiii. Soils; xxxiv. Relation of different races of men to Geology; xxxv. Products of the formations and Summary. W. W.

Reade, T. M. On a Section through Glazebrooke Moss, Lancashire. *Quart. Journ. Geol. Soc.* vol. xxxiv. p. 808.

Describes a railway-cutting through Peat and Boulder Clay, and mentions the occurrence of oak and birch trunks.

——. The Submarine Forest at the Alt Mouth. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 447, 448.

Describes the digging up of two stumps, which proved that the trees were rooted in the clay and grew on the spot.

——. Some further notes on the Submarine forest at Alt Mouth. *Proc. Liverpool Geol. Soc.* vol. iii. pt. iv. p. 362.

Roots of trees (birch, alder, willow, and oak) in the peat extend into the blue clay beneath, and are associated with bones of horse.

——. Clay Boulder. *Geol. Mag.* dec. ii. vol. v. pp. 571, 572.

On the Crosby Shore near the River Alt.

Reid, Clement. On the Junction of Limestone and Culm-measures near Chudleigh. *Rep. Brit. Assoc.* for 1877, *Sections* pp. 76, 77. [Abstract of paper noticed in the GEOLOGICAL RECORD for 1877, pp. 34, 35.]

Reid, James. On the Ironstone Bands of East Kent. 20 *Rep. E. Kent Nat. Hist. Soc.* p. 40.

Richardson, Ralph. The County of Edinburgh, its Geology, Agriculture, and Meteorology. *Edinburgh.* Map.

Roemer, Prof. F. Geological Sketch of a visit to Ireland. *Geol. Mag.* dec. ii. vol. v. pp. 54–62; translated from *N. Jahrb.* [See GEOLOGICAL RECORD for 1877, p. 36.]

Rogers, Philip. A Sketch of the Geological Changes of the Swansea District. Reprinted from *The Cambrian*, May 24. Pp. 9. 8vo. *Swansea.*

Thinks that the Carboniferous beds were not covered by later deposits. Notices the deposits of boulders, the submerged forest, and the clay with marine shells of the South Dock. W. W.

Roscher, G. Das Zinnerzvorkommen in Cornwall. [Cornish Tin Works.] *Sitz. Isis Dresden* for 1877, pp. 117–120.

Rutley, Frank. The Eruptive Rocks of Brent Tor and its Neighbourhood . . . . with some Introductory Remarks on the Application of the Microscope to Petrological Research. *Geological Survey Memoir.* 8vo. *London.* Pp. x, 56; 6 plates (geol. map, views, rock-sections) [pls. ii.–vii. are simply woodcuts, paged with text], woodcuts. Price 15*s.* 6*d.*

Introductory Remarks, pp. 1–13. Examination of Rocks in the Field, 14–31, with a section from the W. edge of Dartmoor at Brazen Tor to Ridge, a description of the rocks round Brent Tor, of Elvan dykes near Tavistock, and of margins of granitic masses. Microscopic Examination of the Rocks, 32–44, describing 29 specimens, of which there are sections in the Jermyn St. Museum. Deductions, 45–50. The views of De la Beche are in the main right; but the rocks included on the Survey map as greenstone are here divided into amphibolites, gabbros, basalts, pitchstones, schistose ashes, &c. The tor seems to be part of a set of volcanic ejectamenta formed at or near a crater, probably preserved through faulting. The plates give 13 coloured rock-sections. W. W.

Sandeman, J. W. Report on the Proposed New River Quay . . . . at Elswick-on-Tyne. 8vo. *Newcastle-on-Tyne.* Pp. 11; Plan. [Privately printed].

On p. 11 is an account of 3 borings at the site of the proposed quay.

Savin, A. List of Vertebrata from the Black or Freshwater Bed at West Runton, in the collection of A. Savin. *Proc. Norwich Geol. Soc.* pt. i. p. 27.

Includes 11 species of Mammalia, and bones of Fishes.

Savin, A. List of Mammalia from the Estuarine Series (Forest Bed) beneath the Freshwater Bed in the neighbourhood of Cromer, in the Collection of A. Savin. *Proc. Norwich Geol. Soc.* pt. i. p. 28.

Includes 12 species.

[**Scarth, Rev. Preb.**] Excursion to Pen Pits, near Wincanton. *Proc. Bath Field Club*, vol. iv. pp. 90–93.

Notes on the origin of these excavations in the U. Greensand.

Shipman, James. Some New Features in the Geology of East Nottingham. *Mid. Nat.* vol. i. pp. 18–20, 30–33, woodcut.

Corrects errors in the Geological Survey Map, 71 N.E., especially as regards two faults N.E. of Nottingham, and describes a new map by the author. The area represented as occupied by U. Keuper Marls is lessened. The conglomerate at the base of the Keuper is described and traced; it lies on an eroded surface of the Bunter. Infers that the old Bunter land was gradually submerged from an easterly direction. W. T.

Shone, W. On the Glacial Deposits of West Cheshire, together with Lists of the Fauna found in the Drift of Cheshire and Adjoining Counties. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 383–397.

Describes the section in the Newton cutting of the Chester and West Cheshire Railway, exposing L. Boulder Clay, Middle Sands, and U. Boulder Clay, and examines the fauna of the Drifts, giving lists of the fossils in each division at various localities. A. J. J-B.

——. How we found the Microzoa in the Boulder Clays of Cheshire, &c., and what were the results. *Mid. Nat.* vol. i. pp. 292–295.

Shrubsole, W. H. On the New Town Well at Sheerness. *Proc. Geol. Assoc.* vol. v. no. 7, pp. 355–362.

Describes the beds passed through. Gives a list of fossils from the London Clay, chiefly Foraminifera. Details of the beds, Alluvium, London Clay, and Lower London Tertiaries, 502 feet, and Chalk 303? W. W.

Sidney, Samuel. Exmore Reclamation. *Journ. R. Agric. Soc.* ser. 2, vol. xiv. pp. 72–97.

Notes on the soils and geology.

Skertchly, S. B. J. The Geological part of "The Fenland—Past and Present." By S. H. Miller and S. B. J. Skertchly. Pp. xxxii, 649. Geological and topographical maps, 25 full-page illustrations, 31 woodcuts. 8vo. *Wisbech.* Price 31*s.* 6*d.*

Chap. ii. The Pre-Historic inhabitants of Britain. Chap. vi. Drainage of the Fens. Chap. vii. Rivers of the Fenland. Chap. viii. The Wash (Formation of Marshes, &c.). Chap. xi. The Pre-Historic fauna of the Fenland; Old Gravels, List of Mollusca, &c.; notes on newer Tertiary and Glacial beds, Pleistocene fauna, Climatal groups of mammals, discussion on their Migration and Diffusion; the mixture of warm temperate and cold types due to climatal and not seasonal change, the remains being commingled by reconstruction of deposits; Peat and Silt, notes on organic remains, &c. Chap. xiii. The Sanitary Condition of the Fens (Geological Notes on the Water Supply). Chap. xv. Geology of the Fens: Fenland Strata; Notes on Norwich Crag by **H. B. Woodward,** and on Pre-glacial beds of Cromer Cliffs by **C. Reid**; Glacial Beds; Cause of Glacial Cold; advocates the land-origin of the Chalky Boulder Clay; Inter-glacial Beds, comprising, in ascending order, Brandon Beds (probably of Middle Glacial Age), Flood Gravels, Palæolithic gravels of Ancient Valleys, Palæolithic gravels of Modern Valleys; the last three are newer than the Chalky Boulder Clay, but the Brandon Beds are older. Notes the discovery of palæolithic implements in the Brandon Beds. Account of the Fen Beds, Peat, Buried Forest, Shell Marl, Silt, Neolithic Man. Appendices; Synoptical Table of Strata, showing Fossils, Physical conditions, &c. H. B. W.

Skertchly, S. B. J. Remarks on the Geology of the Fenland. [Abstract.] *Proc. Norwich Geol. Soc.* pt. i. pp. 20, 21.

A statement of conclusions published at length in 'the Geology of the Fenland' and 'The Fenland—Past and Present.'

Smith, Charles. Inaugural Address. *Trans. Barrow Nat. Field Club*, vol. ii. pp. 11–18.

Contains remarks on the local geology.

——. Boulder Clay. *Trans. Cumb. Assoc.* pt. iii. pp. 91–108.

The origin of boulder clay is explained, and reasons are given for supposing that of the Furness district to be of local origin.

Smyth, W. W. Address of the President for 1877. 64 *Ann. Rep. R. Geol. Soc. Cornwall*, pp. xi–xxvi.

Résumé of what is known of the Devonian of Cornwall and Devon.

Stock, T. A Tour in search of Fossils. *Sci. Goss.* no. 168, pp. 270–272.

Describes the localities and fossils to be obtained at Settle, Dudley, Bristol (Oolite), Aust (Rhætic), Burrington Combe in the Mendips (Carboniferous), Bradford, and Minchinhampton (Oolites). A. J. J-B.

Stoddart, W. W. Remarkable Fossil Deposits near Bristol.—No. 1. Singular Deposit of the Fossil Bones of the Water Vole (*Arvicola amphibia*). *Proc. Bristol Nat. Soc.* n. ser. vol. ii. pp. 142–145.

Notes occurrence in a loam filling a crevice in the Carboniferous Limestone near Holwell. The remains are illustrated by a plate.

Stokes, A. H. Economic Geology of Derbyshire. *Trans. Chesterfield Inst. Eng.* vol. vi. pls. i., ii.

Describes Soil and Minerals. Coal, pp. 14–38 (of reprint); Ironstone, pp. 39–48; Lead Ores, pp. 48–54; Gypsum, Barytes, Pyrites, Zinc, Manganese, Amber, Ochre, Silver, Copper, Antimony, Carboniferous Limestone, Marbles, Chert, Calc Spar, Fluor Spar, Stalactites, Tufa, &c., Rotten Stone, Bitumen, Petroleum, Sulphur, Basalt, Jasper, Buxton Diamonds (Quartz in Basalt), Fuller's Earth, Clays, Magnesian Limestone, Sandstones, Millstone Grit, Mineral Waters. Statistics of production of each during 1876 given. W. T.

Symons, R. On Carclase Tin and China Clay Pit. (Abstract.) *Journ. R. Inst. Cornwall*, no. xx. pp. 140–143, plate.

Gives exact dimensions of the pit, and a general description of the mode of occurrence of the tin-ore and china-clay.

Tawney, E. B. On the Older Rocks at St. Davids. *Proc. Bristol Nat. Soc.* n. ser. vol. ii. pp. 109–125.

Gives an account of Dr. Hicks's researches on the Dimetian and Pebidian rocks, after a personal study of the district.

——. On the supposed Inferior Oolite at Branch Huish, Radstock. *Proc. Bristol Nat. Soc.* n. ser. vol. ii. pp. 175–178.

The beds noted by the Geological Survey as I. Oolite, at Branch Huish Farm, near Radstock, belong really to the M. Lias. A list of the fossils obtained is given. H. B. W.

——. On an Excavation at the Bristol Water Works Pumping Station, Clifton. *Proc. Bristol Nat. Soc.* n. ser. vol. ii. pp. 179–182.

Records a section in Oakfield Street, Clifton, in green and red marls (Keuper), black shales, clays and limestones (Rhætic), clays and limestones (Infralias). The "landscape bed" or "Cotham Marble" is noticed as here marking the upper limit of the Rhætic beds, while the grey marls (beneath the shales with *Avicula contorta*, &c.) are placed with the Keuper. Many fossils are mentioned. H. B. W.

Taylor, J. E. An Editor's Holiday in the West of Ireland. *Sci. Goss.* no. 166, pp. 228–231; 2 woodcuts.

Describes the scenery and geology from Westport to Clifden; thence to Galway, and the limestone hills of the Burren, with their remarkable terraces and fern-filled fissures. A. J. J-B.

Tomes, R. F. On the Stratigraphical Position of the Corals of the Lias of the Midland and Western Counties of England and of South Wales. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 179–195, pl. ix. (fossils).

Uses the term "*Lima*-beds" instead of zones of *Ammonites angulatus* and *A. Bucklandi*, the latter species being rare in the district, and the former, though common, having a great vertical range. The new species described are:—*Montlivaltia rhœtica*, White Lias; *Thecosmilia socialis*, *Tricycloseris* (n. gen.) *Anningi*, *Thamnastræa Etheridgii*, *Cyclolites cupuliformis*, *Montlivaltia foliacea*, *M. excavata* (the last 5 from M. Lias); *M.? tuberculata*, U. Lias; *M. papyracea*. Details of sections at Bindon, Street, and Grafton are given. W. W.

Topley, W. Report [to the Channel Tunnel Company] on the Recent French Exploration connected with the Channel Tunnel. 8vo. *London.* Pp. 14. Geological Section. (Privately printed.)

As the Straits of Dover lie in a synclinal, no straight tunnel can be carried wholly through Chalk without flints; it must either for a short distance (1 to 2 miles) encounter Chalk with flints near its middle, or Gault near one end. The former is the better plan; and from St. Margaret's Bay to near Sangatte is the best line. The detailed mapping of the sea-bed proves it unlikely that any great fault will be met with.
W. T.

Tregellas, W. H. Tourists' Guide to Cornwall. Pp. vii, 142. 8vo. *London.* Price 2*s.*

Physical Geography and Geology, pp. 1–4. Mines, by **R. Meade,** pp. 19–33.

Tute, Rev. J. S. Notes on the Glacial Drift near Ripon. *Proc. Geol. Soc. W. Riding Yorksh.* n. s. pt. iv. pp. 210–214.

Describes the manner in which the brown Boulder Clay near Ripon lies, on its W. side, upon the side of a valley, which intersects the direction of the ordinary river-courses almost at right angles; and concludes, from the character and position of the various deposits, that this N. and S. valley forms a natural boundary between the local and Glacial Drift, and that here was the edge of an ice-cap, which covered the hills to the W., and was cut off along this line by the Glacial sea.
J. P. D.

Twamley, Charles. On the Triassic Formation in Warwickshire. *Proc. Warwick Field Club,* 1878, pp. 13–36, figs. 1, 2.

Details of well-sections, two at Leamington and one at Coventry.
one at Rugby.

Ussher, W. A. E. The Chronological Value of the Pleistocene Deposits of Devon. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 449–458.

i. *Deposits*: firstly, those beds disconnected with the present lines of drainage; secondly, valley-deposits, raised beaches, and submerged forests. ii. *Sequence of Deposits and of Physical Changes,* with table of results, classified as Preglacial, Glacial, and Post-glacial. A. J. J-B.

——. On the Chronological Value of the Triassic Strata of the South-western Counties. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 459–470.

Supplementary to a paper noticed in the GEOLOGICAL RECORD for 1877, p. 41. Undertakes to prove six propositions:—1, that the Trias of Devon and Somerset was not connected with that of Gloucestershire till the close of the Keuper; 2, that the area S. of the Quantocks was not submerged before the Keuper period; 3 and 4, that the subsidence progressed from S. to N., and that the greatest development of the lower beds is on the S. coast; 5, explains the derivation of igneous-rock fragments; 6, correlates the Trias of the S.W. counties with that of other districts. A. J. J-B.

Ussher, W. A. E. On Terminal Curvature in the South-western Counties. *Geol. Mag.* dec. ii. vol. v. p. 237.

In answer to Mackintosh (see p. 22).

——. On the Geology of Paignton. *Trans. Devon. Assoc.* vol. x. pp. 203–208.

The geological epochs represented in the neighbourhood (Pleistocene, Triassic, and Palæozoic) are each shown to be capable of triple subdivision. The Pleistocene includes:—*a*, old fluviatile deposits; *b*, peat with traces of submerged forest; and *c*, alluvial deposits and blown sand. The trias is divided into breccio-conglomerates, breccia, and red rock sand; the Palæozoic (Devonian) into (1) limestones, (2) slates and shales, and (3) sandstones. T. M. H.

——. On the Mouth of the River Exe. *Trans. Devon. Assoc.* vol. x. pp. 377–383.

Describes the embouchure of the Exe as lying between two faults. Notices the action of the sea upon the Triassic coasts; the Post-tertiary gravels in the neighbourhood; and the modern changes in the Warren Sandbank. T. M. H.

Walford, E. A. Notes on some Upper and Middle Lias Beds in the neighbourhood of Banbury. *Proc. Warwick Field Club*, 1878, pp. 1–23 [after p. 48].

Gives lists of fossils, & stratigraphical details,

Walker, A. O. Notes on Lower Coal Measures between Bagillt and Holywell. *Proc. Chester Soc. Nat. Sci.* no. 2, pp. 9–12.

Describes beds of aluminous limestone (cement stone) in shales, containing plants, coprolites, and a marine fauna, and resembling L. Coal Measures more than Millstone Grit. Suggests that the Chert beds represent the latter. A. S.

Walker, J. F. On the Occurrence of *Terebratula Morieri* in England. *Geol. Mag.* dec. ii. vol. v. pp. 552–556.

In Inf. Oolite at Bradford Abbas. Gives lists of Brachiopoda from Inf. Oolite and Fullers' Earth.

Wethered, E. The Carboniferous Flora of the Bristol Coalfield. *Proc. Cotteswold Club*, vol. vii. pp. 73–92.

Gives an account of the plant-remains found in the Carboniferous Limestone, Millstone Grit, L. Coal Measures, Pennant Grit, and U. Coal Measures; a generalized section of the Bristol Coal-field; and plates showing (1) true form of *Sigillaria monostachya*, (2) *Calamites radiatus*, showing roots, (3) ordinary form of coal stone. The flora of the Carboniferous Limestone is more Devonian than Carboniferous. Gives notes on the physical conditions attending the formation of the strata, and an analysis of coal from Speedwell Colliery, near Bristol. H. B. W.

Whitaker, William. The Well-section at Holkham Hall, Norfolk. *Proc. Norwich Geol. Soc.* pt. i. pp. 16–18.

The beds passed through were:—Gravel, about 20 ft.; Chalk, 635; Red Marl (? Red Chalk), 8; Gault, 10; Neocomian, 70,—Clay (Kimeridge or Neocomian ?) being touched at bottom. H. B. W.

——. Excursion to the North Downs, Surrey. *Proc. Geol. Assoc.* vol. v. no. 8, pp. 495–497.

The outlier of Oldhaven Beds at Caterham Waterworks and the deep well noticed. Two trenches at the foot of White Hill showed the beds from the base of the Chalk to the top of the Gault, as does a road-section to the west. There is no marked line between Chalk and U. Greensand or between U. Greensand and Gault. A section of a fullers' earth pit, in the L. Greensand, at Red Hill, noted. W. W.

Whitaker, W., W. H. Penning, W. H. Dalton, and **F. J. Bennett.** The Geology of the N.W. Part of Essex and the N.E. Part of Herts, with Parts of Cambridgeshire and Suffolk. *Geological Survey Memoir.* 8vo. *London.* Pp. vi, 92; 19 woodcuts. Price 3*s.* 6*d.*

An explanation of Sheet 47 of the Survey Map, the chief towns in which are Bishop's Stortford, Braintree, Hertford, Saffron Walden, and Sudbury. Chalk, pp. 4–11, with lists of fossils; Lower London Tertiaries, 12–26; London Clay, 27–30; Red Crag, 30, 31; Glacial Drift, 32–63; Post-Glacial Drift, 64–72; Alluvium, 72, 73. Details of sections are given throughout, and there are appendices of well-sections and borings, pp. 74–89. W. W.

[**Willett, Henry.**] The Record of the Sub-Wealden Exploration. 8vo. *Brighton.* Pp. 148.

A reprint of various papers and reports (separately paged), most of which have been noticed in the GEOLOGICAL RECORD for 1874, pp. 40, 41; 1875, p. 44; 1876, pp. 36, 39, 40; 1877, p. 42. Also contains reprints of 4 papers by **Prof. W. B. Dawkins** from the *Brighton Daily News* [1872]; various letters in this and other local papers; and geological sections by **W. Topley** (see p. 10). W. T.

Winwood, Rev. H. H. Notes on an Oolitic Quarry at Bathford. *Proc. Bath Nat. Hist. Club*, vol. iv. pp. 82–87.

Treats of the occurrence of pebbles of flint and quartz on the Oolitic downs.

Woodhouse, Rev. Thomas. Some notes on the Geology of Otterhampton. *Proc. Somerset Archæol. Nat. Hist. Soc.* vol. xxiii. (n. ser. vol. iii.) pt. 2, pp. 65–69.

Brief notice of Lias. Accounts for *Ammonites* being found in pebbles on the beach and not in the beds forming the cliff, on the supposition that they are derived from more fossiliferous beds elsewhere, and that there is greater induration of the rock around fossils. Deals with the relations of sea and land, and considers that a subsidence is now in progress. W. A. E. U.

Woodward, Dr. Henry. On the Occurrence of *Branchipus* or *Chirocephalus* in a Fossil State in the upper part of the Fluvio-Marine Series (Middle Eocene) at G~~a~~urnet and Thorness Bays, near Cowes, Isle of Wight. *Rep. Brit. Assoc.* for 1877, *Sections*, p. 78.
In a thin band of freshwater limestone in the Bembridge series.

——. Note on *Penæus Sharpii*, a Macrurous Decapod Crustacean from the Upper Lias, Kingsthorpe, near Northampton. *Geol. Mag.* dec. ii. vol. v. pp. 164, 165, pl. iv.
To correct the locality. Originally described as from L. Lias.

Woodward, H. B. Note on the Discovery of the Mastodon at Horstead. [Abstract.] *Proc. Norwich Geol. Soc.* pt i. pp. 18, 19.
Points out the original testimony given by the Rev. J. Layton for the statement that an entire skeleton of Mastodon was found at Horstead. Quotes Mr. Gunn on the subject, and agrees with Mr. Harmer that the stone-bed is the marine basement-bed of the Crag. H. B. W.

——. Notes on the Norwich Crag. [Abstract.] *Proc. Norwich Geol. Soc.* pt. i. p. 22.
The Fluvio-marine Crag, the Chillesford Shell-bed, and the Bure Valley Crag are not persistent horizons throughout the Norwich Crag; for the Crag comprises false-bedded deposits in which neither lithological characters nor fossils are persistent, and in which more often no subdivisions can be made. H. B. W.

——. Excursion to Mildenhall. *Proc. Norwich Geol. Soc.* pt. i. pp. 32–34.
Records sections showing the relation of the Chalky Boulder Clay to beds yielding palæolithic implements.

——. Excursion to Cromer. *Proc. Norwich Geol. Soc.* pt. i. p. 40.
Note on the stool and trunk of a tree in the Forest-bed.

——. Address. *Proc. Norwich Geol. Soc.* vol. i. pt. ii. pp. 44–67.
Review of the present state of knowledge of Norfolk geology. Maintains that the Crag of Belaugh, etc., with *Tellina Balthica*, belongs to the Norwich Crag, and that near Norwich there is no definite band of clay which can be correlated with the Chillesford Clay. Notices opinions relating to the Forest-bed, classifications of the Glacial deposits, the origin of the deposits, palæolithic implements and Brandon Beds, origin of scenery, etc. H. B. W.

——. Prof. Phillips on the Devonian Question. *Geol. Mag.* dec. ii. vol. v. pp. 424, 425.
In reply to Mr. Hall's communication, see p. 14.

——. Notes on the Devonian Rocks near Newton Abbot and Torquay. *Rep. Brit. Assoc.* for 1877, *Sections*, pp. 78, 79. [Abstract of paper noticed in the GEOLOGICAL RECORD for 1877, p. 44.]

Woodward, H. B., and Clement Reid. Excursion to Norwich and Cromer. *Proc. Geol. Assoc.* vol. v. no. 8, pp. 513–518.

Notice the Chalk, Norwich Crag, and Drift shown in pits at Trowse, Whittingham, Postwick, Thorpe, and round Norwich, and the Pre-glacial and Glacial beds of the coast from Sherringham to Cromer. W. W.

Worth, R. N. On the Origin of the Ossiferous deposits in the Oreston Caves. *Trans. Devon. Assoc.* vol. x. pp. 404–410.

Reviews the opinions of Pengelly regarding a paper on the geology of Plymouth by the author (*Journ. Plymouth Inst.*), and gives additional facts and conclusions with reference to the fissures in which the bones were obtained. T. M. H.

——. Tourists' Guide to South Devon. 8vo. *London.* 2*s.*

Geology and Mineralogy, pp. 8–13.

An Account of the Strata of Northumberland and Durham as proved by Borings and Sinkings. A–B. 8vo. *Newcastle-on-Tyne.* Pp. 293.

The first part of a work by the N. of Engl. Inst. Engineers. Contains a detailed account of 387 borings and sinkings, arranged alphabetically by names of places. Nearly all are in the Coal Measures; but a few are in the Carboniferous Limestone Series. There is an Index of places and of coal-seams. W. T.

Memoir on the Agriculture of England and Wales, prepared ...... for the International Congress, Paris, 1878. *Journ. R. Agric. Soc.* ser. 2, vol. xiv. pt. 2, pp. 267–910.

James Caird. General View of British Agriculture, pp. 271–332; Soil, Climate, and Crops, pp. 290–293.

J. A. Clarke. Practical Agriculture, pp. 445–642. Chap. i. Physical and Statistical, pp. 451–468 (Hydrography, Geology). Chap. vii. Characteristic Crops of various Counties, with notices of geology and soils, pp. 582–620.

Charles Whitehead. The Cultivation of Hops, Fruit, and Vegetables, pp. 719–760. Hops, with notes on the Geology and Hop Soils, pp. 723–736.

Dr. Augustus Voelcker. The Influence of Chemical Discoveries on the progress of English Agriculture, pp. 803–854. The Soil, pp. 808–816. W. T.

Guide to the County of Dublin: its Geology, Industries, Flora and Fauna. 8vo. *Dublin.* Pp. vii, 219, 100; 3 maps. Price 3*s.* 6*d.*

The Physical Geology of the Neighbourhood of Dublin, by **Rev. M. H. Close**, pp. 19–47, geol. map. Describes Cambrian, L. Silurian, Devonian, Carboniferous, Granitic, Glacial, and Recent deposits. Palæontology by **Baily**, Mineralogy by **Haughton**: see *post.* W. H. D.

See also:—

Barrois, Dr. C. Cretaceous Rocks of the Ardennes: p. 46.

Brylinski, M., and **G. Lionnet.** Deposits of Phosphate of Lime: p. 51.

Hunt, Dr. T. S. Cambrian of Wales, etc.: *post*, under AMERICA.

Wood, S. V., Jun. Glacial deposits: *post*, under AMERICA.

SUPPLEMENT FOR 1874–1877.

Anon. Report of the Committee appointed to Investigate the Cause of the Outburst of Gas in the Barnsley Coal at the New Oaks Colliery, on the 30th August, 1876. [*Trans.*] *Midland Inst. Eng.* [vol. 6], pp. 19, 20, plate. [1877.]
The plate gives a section of the beds.

——. The Norfolk Broads. *Fraser's Magazine*, n. ser. vol. xv. pp. 374–381. [1877.]
Notes on the geology.

——. [**Bevan, Dr. G. P.**] Physical Features, Geology, Manufactures, and Products of South Wales. Pp. v–xix of Murray's 'Handbook for Travellers in South Wales.' New ed. 8vo. *London*. [1877.]

Binney, E. W. Note on the Upper Coal Measures of Cannobie, Dumfriesshire. *Proc. Lit. Phil. Soc. Manch.* vol. xv. p. 192‸ [1877.]*. 192–194

Blakemore, W. The Faults of the South Staffordshire Coalfields. *Trans. S. Staff. Inst. Eng.* n. ser. vol. iii. pp. 52–57. [1877.]
Refers especially to the boundary-faults, running from north to south.

——. Boundary Faults of the South Staffordshire Coalfield. *Trans. S. Staff. Inst. Eng.* n. ser. vol. iii. pp. 92–97, 108–112. [1877.]
A continuation of the above, with discussion.

——. Remarks on some of the Central Faults of the South Staffordshire Coalfield. *Trans. S. Staff. Inst. Eng.* n. ser. vol. iii. pp. 126–132. The discussion seems to be continued pp. 146–152. [1877.]
A plate (2 miles to an inch) shows the various faults (70 in number) and the extension of the coalfield, as proved by recent explorations in the N. and N.W. parts and in the E. 7 other plates give sections of the beds passed through at West Cannock; at Goldthorn Hill Waterworks, Wolverhampton; at Wood End, Wednesfield; at Ashmore Park Colliery, Wednesfield; at Old Coppice Colliery, Cheslyn Hay, and Fair Oak; at Cannock and Huntington; and at Fair Oak Colliery. W. W.

* The red Coal-Measure Shales under the Permian breccia are the highest Carboniferous rocks in Great Britain.

Buckman, Prof. James. On the Fossil Beds of Bradford Abbas and its vicinity. *Proc. Dorset Field Club*, vol. i. pp. 64–72. [1877.]
Describes the various beds, giving lists of fossils. Tabulates sections of the Inf. Oolite of the Cotteswolds, Bradford Abbas, and Ham Hill.

Egan, F. W. Explanatory Memoir accompanying Sheet 59 of the Map of the Geological Survey of Ireland, with Palæontological Notes by **W. H. Baily.** Pp. 32. 8vo. *Dublin.* [1877.] Price 1*s.* 3*d.*
Descriptive of parts of Down, Monaghan, and Louth.

Gjers, John. A short Historical Sketch of the Rise and Progress of the Cleveland Iron Trade .... *Trans. Chesterfield Inst. Eng.* vol. iii. p. 63, pl. xxviii. (section). [1875.]
Geological Position of the Ironstone, Main Bed. Chemical Composition (with analysis of the ironstone and of Weardale limestone), pp. 67–69. W. W.

Green, Prof. A. H. On the Variations in Thickness of the Silkstone and Barnsley Coal Seams. See GEOLOGICAL RECORD for 1876, p. 13. Also printed in [*Trans.*] *Midland Inst. Eng.* [vol. 4], pp. 169–176; discussion, pp. 176–178, pl. i. (sections). [1875.]
Accounts for these changes on the supposition of different physical conditions at different places at the time of deposit.

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G~~wi~~urlt, —. [New Bone Cave, Herefordshire.] *Verh. nat. Ver. preuss. Rheinl.* Bd. xxxi. *Sitzungsb.* pp. 79, 80. [1874.]
Describes the deposits in a cave near Monmouth.

Harrison, Jonathan. The South East Leicestershire Coalfield and the Geological Formations of the Surrounding District. *Trans. Chesterfield Inst. Eng.* vol. iv. pp. 319–326, pl. xx. (section). [1877.] Discussion, vol. v. pp. 134, 135, 153–155.
Notices the Charnwood rocks and the Coal Measures. The section is from Enderby, through Desford, Bagworth, Whitwick, and Swannington, to Melbourne (Derbyshire). W. W.

James, Rev. John. Sarsens or Säsens. *The Newbury Weekly News*, September 1876.
Thinks that the true Sarsens are the igneous masses (not the sandstones), and regards them as meteoritic.

Latham, Richard. Sinking of the Lye Cross Pits upon the Summit of the Rowley Hills. *Trans. S. Staff. Inst. Eng.* n. ser. vol. ii. p. 11, pl. i. [1876.] Entered from notice in *Coll. Guard.* in the GEOLOGICAL RECORD for 1876, p. 21.
The plate is a table of the beds passed through, to a depth of over 258 yards.

Marten, H. J. Wolverhampton Corporation Waterworks. Report on the 24-inch Bore-hole at Cosford. Pp. 4. Fol. *Wolverhampton.* [1876.]

Contains analyses of the water from the Bore-hole at Cosford, from the River Worf, &c.

Marten, H. J. Stafford Corporation Waterworks. Report with reference to a proposed new Well-Boring and Pumping-Station, in lieu of that intended to be constructed at the 'Common' Site. Pp. 8, plate (plan). Fol. *Stafford.* [1877.]

Describes the geological features of the locality.

Miller, Robert. On Particular Outbursts of Gas in Coal Mines. [*Trans.*] *Midland Inst. Eng.* [vol. 5], pp. 99–104; discussion, vol. 6, pp. 46–53. [1877.]

Plant, James. Geology of Leicestershire. *Rep. Leicester Lit. Phil. Soc.* 1874, pp. 37–41, and 1875, pp. 42–46.

Reports on collections of rock-specimens, giving notes on the Drift, the discovery of the Rhætic Beds in the county, Trias, Carboniferous rocks, &c. W. W.

Russell, R. Lithological Description of the Measures occurring in the Northern Portion of the Yorkshire Coal-field. [*Trans.*] *Midland Inst. Eng.* [vol. 4], pp. 195–206; 2 folding plates. [1875.] Discussion, pp. 231–240. [1876.]

Describes the chief beds of coal, &c. Fig. 1 is a general section of the L. and of the M. Coal Measures; figs. 2 and 3 show the changes of certain coal-seams.

In the discussion **Mr. Chambers** gives a table of sections in the Silkstone Main Colliery, Cawthorne, showing the increase of dirt in the Silkstone Seam. W. W.

——. The Flockton Coals and the Physical Conditions that led to their Formation. [*Trans.*] *Midland Inst. Eng.* [vol. 5], pp. 48–59, plate (sections); discussion, pp. 127–131. [1877.]

Gives sections of the coals, showing their changes, and tracing out the varying conditions of deposit.

Smith, Alexander. Excursion to Scotland. *Trans. S. Staff. Inst. Eng.* n. ser. vol. i. p. 87. [1875.]

Remarks on the geology of the north of Scotland, with an analysis of Oolitic coal, pp. 89, 90.

Stokes, A. H. Boring and Boring Machines. *Trans. Chesterfield Inst. Eng.* vol. iii. p. 192. [1875.]

Refers to geological conditions of sites, pp. 192–197. "Approximate Section of the Nottingham and Derbyshire Coal Measures from the Permian Beds to the Millstone Grit," pp. 238–247, noting 509 beds. W. W.

White, Rev. Gilbert. The Natural History and Antiquities of Selborne, in the County of Southampton. Ed. by **Prof. Thos. Bell.** 2 vols. 8vo. *London.* [1877.]

New Ed. of a work first published in 1789. Contains a note on the Geology of Selbourne by **William Curtis.**

Wilson, James, and **Robert Miller.** On a Sudden and Heavy Discharge of Fire-damp from the Floor at the New Oaks Colliery, Barnsley. [*Trans.*] *Midland Inst. Eng.* [vol. 5], p. 24, plate. [1877.]

The plate gives a section of the beds.

Chemin de Fer Sous-marin entre la France et l'Angleterre. Rapports présentés aux Membres de l'Association sur les Explorations Géologiques faites en 1875 et 1876. Fol. Paris. Pp. 55; 5 plates (3 maps, 2 sections), 14 woodcuts. [1877.]

Gives summary of information obtained in 1875 (see GEOLOGICAL RECORD for 1875, p. 46), and fresh information of 1876. **A. Lavelley,** pp. 1–15, General Report. **A. de Lapparent** and **A. Potier,** pp. 33–55, Geological Report, and Report on the Boring at Sangatte. Borings prove that the Gault extends up the straits towards the N.E., and that the synclinal lies near mid channel. Details of the Sangatte Boring (130 metres), and notes on the water met with in it, are given. W. T.

2. *EUROPE.*

Sub-Editor Prof. G. A. Lebour, M.A., F.G.S.

Acconci, L. [Cave at Cucigliana.] *Proc.-verb. Soc. Tosc. Sci. Nat. Pisa,* vol. i. pp. xx, xxi.

Note on the cave-earth and its fossils.

Acy, E. d'. Le Limon des Plateaux du Nord de la France et les Silex travaillés qu'il renferme. [Loam of the Plateaux of N. France and its Worked Flints.] 4to. *Paris.* Pp. iv, 72, map, 10 plates (section and flint implements).

Believes that this loam is not of glacial origin, but resulted from a great inundation, after the valleys had been cut out. Gives a table of the lithological composition of 23 specimens. Notices the places where implements have been found. W. W.

Adan de Yarza, R. Roca eruptiva de Motrico (provincia de Guipuzcoa). [Eruptive Rock of Motrico.] *Ann. Soc. Españ. Hist. Nat.* t. vii. pp. 5.

Adan de Yarza, R., and **Fr. Arias.** Bosquejo geologico y topografico de la zona minera mas importante de la provincia de Viscaya. [Geology of the most important Mining Zone of the Province of Biscay.] Pp. 4.

Anders, Fritz. Abenteuerliche und lehrreiche Ferienreisen. Band 1. Der junge Generalstab im Harz. [Holiday Tour in the Harz.] 8vo. *Bielefeld* and *Leipzig.*

Account of a geological and palæontological tour under Dr. Studnitz.

Anon. Coal Mining at the Paris Exhibition. *Engineering,* vol. xxv. pp. 391, 399, 448, vol. xxvi. pp. 2, 20, 94, 247, 327, 389, 428.

The Coal-Mines of Aniche (Nord), the Lens Colliery Co., the Ferfay Collieries (with diagrams showing arrangement, thickness, etc. of the various seams), the Viscoigne Co., the Anzin Co. (with sketch map of the district worked by this company, the largest in the world—69,300 acres); its yearly produce is more than 200,000 tons of coal. F. B. E.

——. The Iron Trade and Ironworks of France. *Engineer,* vol. xlvi. pp. 161, 179.

Terre Noire and Creusot described. Coal Mines and Iron Mines. Hayange Ironworks are also described.

Anon. Le Creusot. MM. Schneider et Cie. *Engineering*, vol. xxvi. pp. 258, 278, 288.

——. Hayange (Lorraine). *Engineering*, vol. xxvi. p. 514.
Describes the Oolitic iron-ore worked there. It contains hydrated oxide of iron, the yield of metal being about 33 p. c.

——. Principal Coal Fields and Iron Works of France. *Journ. Iron Steel Inst.* Appendix 1 (Paris meeting). Coloured map. (No pagination.)
A list of the chief coal-fields of France is given, the map showing their positions.

——. Spanish Coal. *Coll. Guard.* vol. xxxv. p. 917.
Notices an article in *Revista Minera*, May 24, showing that the Carboniferous beds of Spain are rich in coal.

——. Coal in Austria. *Coll. Guard.* vol. xxxvi. p. 215. [From the *Times*.]
Calls attention to the abundance of coal within 3 or 4 feet of the surface in the low hills north of Cilla.

——. The Northern Coal-field of France. *Coll. Guard.* vol. xxxvi. pp. 713 and 784.
About 94 miles long and ½ mile to 11 miles broad, with an area of about 440 square miles.

——. South Russian Coal-fields. *Iron*, n. ser. vol. xi. p. 805.
Brief description, with commercial details.

——. Aperçu des Richesses Minérales de la Russie d'Europe. [Mineral Resources of Russia in Europe.] 4to. *Paris*. Pp. 151, geol. map, plate (sections and local maps). Publié par le Département des Mines du Ministère du Domaine de l'Etat. (Paris Exhibition, 1878.)
A description of minerals and ores, arranged according to districts. Many analyses are given, and references to previous writers.

——. La *Carte géologique de la Suède* et ses envois à l'Exposition Universelle de Paris, en 1878, avec une description succincte des formations géologiques de la Suède. [The Geological Survey of Sweden and its Exhibits at the Paris Exhibition 1878, with a Description of the Geological Formations of Sweden.] Pp. 57. *Stockholm*.

——. Description des houillères du Nord et du Pas-de-Calais visitées par le congrès de Douai. [Collieries in the Depts. du Nord and Pas-de-Calais.] *Bull. Soc. Industr. min. St. Etienne*, sér. 2, t. vii. p. 5.

——. Notice sur les houillères de Brandeisel-Kladno en Bohême. [Collieries of Brandeisel-Kladno in Bohemia.] *Vienna*.

Anon. Notice sur les mines, usines et domaines du Banat en Hongrie. [Account of the Mines, Works, and Lands of the Banat, Hungary.] *Vienna.*

——. Trifailer-Kohlenwerks-Gesellschaft. Die Kohlenwerke. [The Trifail Colliery.] *Vienna.*

——. Die Eisenerze Oesterreichs und ihre Verhüttung im Jahre 1877. [The Iron-ores of Austria, and their smelting in 1877.] *Report of the k. k. Ackerbau-Ministerium*, Heft iii.

——. Die Mineralkohlen Oesterreichs. [The Coals of Austria.] Ed. 2, published by the *k. k. Ackerbau-Ministerium, Vienna.*

——. Pfahlbauten in Oderberg. [Lake-dwellings in Oderberg.] *Mähr.-schles. Grenzbote*, Feb. 17.
Describes the discovery of remains of Lake-dwellings in excavations connected with the gasworks at the Railway Station.

——. Breve Idea de la Constitucion Geologica de España. [Sketch of the Geology of Spain.] *Bol. Com. map. geol. Españ.* t. v. pp. 145-162.
Gives the orography and the range of each formation from Hypogene to Quaternary, with areas.

——. Minerals in Spain. *Coal and Iron Trades Gazette*, vol. v. p. 903.

——. (The Secretary [**Prof. Dewalque**].) [Remarks on the Geological Map of the Grand Duchy of Luxemburg.] *Ann. Soc. Géol. Belg.* t. v. pp. lvi–lviii.

Arcelin, —. Note sur l'Argile-à-silex des Environs de Mâcon. [Clay-with-flints, Mâcon.] *Ann. Soc. Sci. Bruxel.* ann. 2.

Arnaud, H. Parallélisme de la Craie supérieure dans le Nord et dans le Sud-Ouest de la France. [Parallelism of the U. Chalk in N. and S.W. France.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 205–210, large folding table.
The U. Chalk of the S.W. of France includes the Dordonian, Campanian, Santonian, and Coniacian, and is the equivalent of the Danian and Senonian of the N. The table shows the details of this correlation, the author's and Hébert's classifications being shown in parallel columns. G. A. L.

——. Synchronisme de l'étage turonien dans le Sud-Ouest et dans le Midi de la France. [Synchronism of the Turonian in S.W. and S. France.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 233–242.
The *Radiolites cornupastoris* Beds of the S. correspond with the M. Angoumian of the S.W.; the Mornasian with the L. and probably with

the M. Provencian; the U. Rudistes Beds with the U. Provencian; and the Marls of Sougraigne, Moulin-Tiffou, etc. with the L. Coniacian.
G. A. L.

Arnould, —. Bassin houiller du couchant de Mons. [Coal-basin of Mons.] 6 pls. 4to. *Mons.*

Ault-Dumesnil, G. d'. Excursion géologique de la Société Linnéenne à Beauvais. [Geological Excursion to Beauvais.] *Bull. Soc. Linn. N. France*, t. iv. p. 34.

Babánek, F. Ueber den feuerfesten Lehm von Drahlin nächst Přibram. [The Fire-resisting Loam of Drahlin near Přibram.] *Verh. k.-k. geol. Reichs.* pp. 34, 35.

There was formerly much doubt as to the age of this loam. It is now regarded as Cretaceous.

Bachmann, Isidor. [Alpine Fossils.] *N. Jahrb.* Heft iv. pp. 375–377; and Mitth. nat. Ges. Bern. p. 65.

Records the occurrence of fossils at Gam[illegible]lücke and Oberferden, belonging to the zone of *Ammonites angulatus.* schilucke

Badoureau, —. Sur les gisements de chaux phosphatée de l'Estramadure. [Phosphatic Deposits of Estramadura.] *Bull. Soc. Centr. Agric. France*, t. xxxviii. p. 80.

Balguerie, —. [Faluns of Pessac.] *Act. Soc. Linn. Bordeaux*, vol. xxxii. pp. viii–x.

Gives a list of the fossils found in clearing out a stream-course. **M. Benoist** notes neighbouring sections.

Baltzer, A. Geologische Skizze des Wetterhorn's im Berner Oberland. [Sketch of the Geology of the Wetterhorn.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 267–282.

Describes some points of interest on the structure of the Wetterhorn, especially the superposition of Gneiss to Jurassic beds.

——. Beiträge zur Geognosie der Schweizer-Alpen. [Geology of the Swiss Alps.] Nos. 4 and 5. *N. Jahrb.* Heft i. pp. 26–37, Heft v. pp. 449–489; 2 pls.

A continuation (see Geological Record for 1877, p. 52). Describes the way in which Jurassic Limestones are overlain by gneiss along the N. border of the Finsteraarhorn massif, and also some apparent interstratifications of the two rocks. Discusses questions connected with these abnormal appearances, especially whether Studer's suggestion that the gneiss had been erupted in a plastic state is admissible. His own observations are against this view; but further investigations are necessary.
A. H. G.

Salzberg, C. von. Die Tiefbohrung in Goisern. [Deep Boring at Goisern.] *Berg- hütt. Jahrb.* Bd. xxvi. p. 231.

This boring was undertaken in 1871, for the purpose of proving whether a connection exists underground between the salt-beds of Aussee and Ischl. At the end of 1877 it had reached a depth of 482 metres, but was still in the shales and limestones, known to be above the salt-beds. H. B.

Baretti, Prof. Martino. Sui rilevamenti geologici fatti nelle Alpi piemontesi durante la campagna del 1877. [Geological Surveys in the Piedmontese Alps in 1877.] *Atti R. Ac. Linc.* ser. 3, *Mem.* vol. ii. pp. 963–972, pl. (sections).

Notes the occurrence of many varieties of metamorphic rocks and Glacial Drifts in the Rhêmes, Grisanche, and Thuille valleys and the Derby and Morgex Mts. W. H. D.

Barrande, Joachim. Geologische Stellung der Stufen F, G, H des böhmischen Silurbeckens. [Geological Position of Stages F, G, and H of the Bohemian Silurian Basin.] *Verh. k.-k. geol. Reichs.* pp. 200–202. A letter in French.

Regards these stages as Silurian, as against Dr. Kayser, who thinks them L. Devonian. Admits, however, that an U. Silurian fauna may have coexisted partially with that of the "Spiriferen-Sandstein" in parallel vertical series. G. A. L.

Barrois, Dr. Charles. Note sur des traces de l'époque glaciaire sur les côtes de la Bretagne. [Traces of the Glacial Epoch on the Coasts of Brittany.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 535–537.

Summarizes the local events during the Quaternary thus :—1. Continental Period : Peat of Morlaix and Guernsey. 2. Period of submersion and coast ice : Conglomerate of Kerguillé. 3. Second Continental Period : upheaval of Conglomerate of Kerguillé to a height of 10 metres. 4. Second period of depression : last change, culminating in the present state of things. G. A. L.

——. Rudistes trouvés dans le Terrain Crétacé du nord de la France. [Rudistes in the Chalk of North France.] *Ann. Soc. Géol. Nord*, t. v. pp. 75–77.

Indicates the occurrence of *Radiolites*, *Biradiolites*, and *Caprotina* at several horizons in the U. Cretaceous.

——. Sables de l'Empenpont. [Empenpont Sands.] *Ann. Soc. Géol. Nord*, t. v. pp. 78, 79.

Draws attention to a section of these Landenian Sands.

——. Les Sables de Sissonne. [The Sissonne Sands.] *Ann. Soc. Géol. Nord*, t. v. pp. 84, 100 ; 5 woodcuts.

Sissonne is in the valley of the Souch, an affluent of the Serre. The relations of the several beds are shown by a section across this valley.

The Sissonne Sands appear to be fluviatile, and rest on a chalky gravel in which *Elephas primigenius* has been found. The sands may be followed down the valley; but that of the Serre is occupied by a different deposit. A. J. J-B.

Barrois, Dr. Charles. Note sur les alluvions de la rivière d'Aisne. [Alluvial Deposits of the Aisne.] *Ann. Soc. Géol. Nord*, t. v. pp. 110–124; 2 woodcuts.

Describes the deposits in the main valley and then those of the tributaries. Divides them into two groups—the 'grey Diluvium,' of variable composition, and an older gravel, composed mainly of chalk pebbles, which has a wider extension than the former. A. J. J-B.

——. Compte-rendu de l'excursion dans les Ardennes, 1877. [Excursion in Ardennes.] *Ann. Soc. Géol. Nord*, t. v. pp. 140–166.

The party explored the Jurassic and Cretaceous formations between Mézières and Vouziers, including the beds from the Lias to the Kimmeridge Clay, with the overlying Cretaceous divisions of the Cenomanian and Turonian; and descended the valley of the Meuse as far as Namur, to study the Silurian, Devonian, and Carboniferous rocks therein exposed. Gives lists of the fossils collected at the places visited.
A. J. J-B.

——. Mémoire sur le Terrain Cretacé des Ardennes et des régions voisines. [Cretaceous Beds of the Ardennes, etc.] *Ann. Soc. Géol. Nord*, t. v. pp. 227–487, woodcuts.

Describes the *Aptian* of Argonne and Thiérache (Chap. I.), with a table correlating the Aptian and Urgonian beds in Haute Marne, Ardennes, and England. (Chap. II.) Assigns three zones to the *Albian*, those of *Ammonites mammillaris*, of *A. interruptus*, and of *Epiaster Ricordianus*, and traces the variations they present. The *Gault supérieur* he regards as the base of the *Cenomanian* (Chap. III.): the other zones of this division are described in detail, and attention is drawn to the absence of the zone of *Holaster subglobosus* in the Ardennes and Hainault; correlates these zones with those of the English Cenomanian. *The Turonian* (Chap. IV.) is divided into three zones, characterized respectively by *Inoceramus labiatus, Terebratula gracilis*, and *Micraster breviporus*, the last including two minor zones, that of *Holaster planus* (Chalk rock) and that of *Epiaster brevis*. The *Senonian* is described in Chap. V., and the development of the Turonian and Senonian zones is compared with the same as seen in the cliffs of the English Channel. Full lists of fossils are given in each chapter.
A. J. J-B.

——. Note sur le terrain dévonien de la Province de Léon (Espagne). [Devonian of Leon (Spain).] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 536–540.

The base of the Devonian of Leon consists of a thick sandstone, with iron ore in the upper part; above this come, in ascending order, limestones, black shales of Collada de Llama with *Cardiola retrostriata*, red limestones of Puentalba with Goniatites. Correlates these divisions with those of the Devonian in Brittany. G. A. L.

Barrois, Théodore. Note sur les terrains traversés par la fosse no. 5 à Lens. [Beds traversed by Shaft No. 5 at Lens.] *Ann. Soc. Géol. Nord*, t. v. pp. 105–109.

The following beds are identified as pierced by this shaft:—Clay and chalky earth, 30 ft.; White chalk, 103 ft.; Chalk with flints, 66 ft.; Hard nodular chalk, Tun (=chalk rock ?), 17 ft.; Bluish marly chalk, 117 ft.; Greenish marls, 106 ft.; White chalk marl, 60 ft.; Greensand (Tourtia), 16 ft.; Coal Measures. A. J. J-B.

——. Note sur un sondage à Aix-Noulette. [Boring at Aix-Noulette.] *Ann. Soc. Géol. Nord*, t. v. pp. 136–138.

This boring pierces the Chalk, and proves the inversion of the Palæozoic rocks below, so that the Devonian beds overlie the Coal Measures. The thickness of the Chalk and Tourtia is 576 feet, and depth to the Coal Measures 1357 feet. A. J. J-B.

Bayssellance, —. La période glaciaire dans la vallée d'Ossau. [The Glacial Period in the Ossau Valley.] *Ann. Club alp. Franç.* for 1877, ann. 4, p. 423.

Bécourt, —. Le Sol de la partie septentrionale de la Forêt de Mormal. [Soil of the S. part of the Forest of Mormal.] *Ann. Soc. Géol. Nord*, t. v. pp. 72–75, pl. iv. (geol. map).

Besides recent alluvia, the surface deposits consist principally of brickearth (limon), the lower part of which is sandy (ergeron). Clay with flints generally underlies these beds, and crops out along many of the streams; but the Chalk is rarely exposed at the surface. The map shows 5 divisions. A. J. J-B.

Behrens, G. Ueber die Kreideablagerungen auf der Insel Wollin. [Cretaceous Beds of Wollin Island.] *Zeitsch. deutsch. geol. Ges.* Bd. xxx. p. 229–267, pls. x., xi.

Bellucci, —. Selci lavorate dell' uomo in alcuni depositi quaternari del Perugino. [Worked Flints in Quaternary Beds, Perugia.] *Arch. Antrop. Etnol.* vol. viii. fasc. 1.

Benecke, E. W. Abriss der Geologie von Elsass-Lothringen. [Geology of Alsace-Lorraine.] Pp. iv, 123. 8vo. *Strassburg.* Reprint from the Statistical Description of Alsace-Lorraine.

Crystalline slaty rocks (gneiss). Sedimentary and associated crystalline rocks (the latter only Palæozoic). Geological structure and surface features. Recent deposits. W. W.

[illegible] Z. W. [illegible] Heft 1. pp. 57, 58.
[illegible] memoir on the Vosges [illegible] Elie de Beaumont as to the elevation of [illegible] F. W. R.

[illegible] Prof. P. J. Van [illegible]. Sur la découverte de reptiles fossiles [illegible] charbonnage de Bernissart près de Peruwelz. [illegible] from the Bernissart Colliery, near [illegible] Bull. Ac. R. Belg. ser. 2, t. 45, pp. [illegible] [illegible] possibility of Iguanodon in lignite [illegible]. The lignite is associated with [illegible] remains are in a bad state of preservation, and [illegible] G. A. L.

[illegible] Z. [illegible] Echinolampas hemisphaericus in [illegible] of S.W. France.] Act. Soc. [illegible] vol. xxxiii. pp. [illegible] and p. [illegible] Different [illegible]

[illegible] gives a section of the Martignas quarries, [illegible] Molasse form the lower part of [illegible] and gives a comparative table of the Pliocene [illegible] the Rhone Basin, of the Bordelais, of the [illegible] W. W.

[illegible] Arrondissement of Vimeney, Canton of Bouliac.] Act. [illegible] p. li. [illegible]

[illegible] Excursion to Uzeste.] Ibid. pp. lv–lvii.
[illegible] fossils from a bed rich in them, and a section [illegible]

[illegible] *Ibid.* pp. lvii, lviii.
[illegible] position, remarks on which are also [illegible]

[illegible] from the Marl-pits of Gaas.] *Ibid.* p. lxi.
[illegible] from two horizons.

[illegible] Tortonien dans la Gironde. [Tortonian of the [illegible] *Ibid.* [illegible] xc.
[illegible] fossils from a reddish sand with green grains [illegible] from a clay. Concludes that the former bed is Tortonian, and does not separate it from U. Miocene. W. W.

[Geology of the Excursion to Budos.] *Ibid.* pp. xciii–xcv.

Berendt, G. Blatt Linum. Gradabtheilung 44, No. 16.—Blatt Nauen. *Ibid.* No. 22.—Blatt Markau. *Ibid.* No. 28.—Blatt Rohrbeck. *Ibid.* No. 29. [Explanations of 4 Sheets of the Geological Map of Prussia.] Pp. 25, 23, 20, and 34. 8vo. *Berlin.*

Describes Diluvium and Alluvium, giving chemical analyses by **Drs. W. Baer, F. Wahnschaffe, L. Dulk,** and **E. Laufer** and **Ernst Schulz.**

Berendt, G., and **Dr. L. Dulk.** Blatt Cremmen. Gradabtheilung 44, No. 17.—Blatt Marwitz. *Ibid.* No. 23. [Explanations of the Cremmen and Marwitz Sheets of the Geological Map of Prussia.] Pp. 26 and 25. 8vo. *Berlin.*

These sheets consist of Diluvium and Alluvium. Analyses of soils are given by **Dr. F. Wahnschaffe, Dr. L. Dulk,** and **Ernst Schulz.**

~~**Berthelin, G.** Liste des foraminifères recueillis dans les bois de Bouagneuf et à Pornichet. [List of Foraminifera collected in the Woods of Bouagneuf and at Pornichet (Loiro Inférieure).] *Ann. Soc. Acad. Nantes.*~~

Cau c
au Ini
p. xv

Binney, E. W. [Coal-Measure Plants etc. from Spain.] *Proc. Manch. Lit. Phil. Soc.* vol. xvii. pp. 5, 6.

Gives a section of the beds passed through by a shaft over 25 metres deep at Puertollano, near Ciudad Real.

Bittner, A. Vorlage der Karte der Tredici Communi. [On the Map of the Tredici Communi.] *Verh. k.-k. geol. Reichs.* pp. 59–63; translated in *Boll. R. Com. geol. Ital.* vol. ix. pp. 95–101.

Discusses the divisions shown in the map, more especially as regards the zonal palæontological subdivisions from the Rhætic upwards, and including the "calcare rosso ammonitico." G. A. L.

——. Das Tertiär von Marostica. [The Tertiary Beds of Marostica.] *Verh. k.-k. geol. Reichs.* pp. 127–130; translated in *Boll. R. Com. geol. Ital.* vol. ix. pp. 101–105.

In this country there is a continuous succession from Cretaceous to Eocene, lending no support to Hébert's view, that the lowest Eocene deposits are wanting in the Mediterranean district (Vicentin). G. A. L.

——. Vorkommen von Hallstätter Petrefakten im Piestinger Thale und an der Hohen Wand bei Wiener Neustadt. [Occurrence of Hallstadt Fossils in the Piestinger Thal, etc.] *Verh. k.-k. geol. Reichs.* pp. 153–158, small sketch map in text.

Gives lists of the fossils found, and descriptions of the localities.

——. Der geologische Bau des südlichen Baldo-Gebirges. [Geological Structure of the S. Baldo Mountains.] *Verh. k.-k. geol. Reichs.* pp. 396–402.

Geological Survey notes of the district.

Blanc, Ed. Rapport sur les courses de la Société géologique de France dans l'Estérel et à Vence. [Excursions of the Geological

Society of France in the Esterel and Vence districts.] *Mém. Soc. Sci. Cannes*, pp. 24. See **Potier's** account, *post.*

Blanchard, F. Sulle miniere di stagno in Campiglia. [Tin Mines in Campiglia.] *Atti R. Acc. Linc.* ser. 3, *Trans.* vol. ii. pp. 186–190. In French. Translated into Italian in *Boll. R. Com. geol. Ital.* vol. ix. pp. 430–435.

The supposed iron-vein with oxide of tin is simply a fissure in the limestone. Concludes that at Cento Camarelle the ancients worked for tin, not iron. Cassiterite also occurs at Mt. Valerio mine. Analysis of specimens by **A. E. Arnold** and **W. E. Dawson** are given. W. W.

Bleicher, Dr. Essai sur les Temps Préhistoriques en Alsace. *Bull. Soc. Sci. Nancy*, sér. ii. t. iv. fasc. viii. pp. 56–73. Abstract in fasc. vii. pp. 71, 72.

Treats of the deposits with traces of the existence of man. These traces are very rare in the Quaternary beds.

Bogaert, P. J. J. Réponse à la Note précédente de M. A. Dumont sur les Couches de Charbon du Limbourg Néerlandais. [Answer to Dumont on the Coal-beds of Dutch Limbourg. See p. 62.] *Ann. Soc. Géol. Belg.* t. v. pp. 7–10.

Borrel, L. Sur l'éboulement de la montagne du Bec-Rouge (Savoie). [Landslip of the Bec-Rouge Mountain, Savoy.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 47–50.

This is in the Sainte-Foix district of the Tarentaise: the flank in process of sliding is 1450 metres broad; its slope is 1 in 1·19; its height above the sea 2508 metres, and 1218 above the village of Miroir, which it is gradually overwhelming. Full geological and other details are given. G. A. L.

Boué, Dr. A. Erklärungen über einige Details der europäischen Türkei. [Explanations of some Details relating to Turkey in Europe.] *Vienna.*

Boutillier, L. Notice sur la constitution géologique de la Seine Inférieure. [Geology of Lower Seine.] *Bull. Soc. Sci. Nat. Rouen*, sér. 2, ann. xiv. p. 83.

Boyer, G. Le mont Poupet. [Mt. Poupet.] *Ann. Club alp. Franç.* for 1877, p. 400. map, & 23 sections.

Contains geological notes. *

Breton, L. Étude stratigraphique du terrain houiller d'Auchy-au-Bois. Théorie sur le prolongement au sud de la zone houillère du Pas-de-Calais et comparaison des terrains houillers d'Auchy-au-Bois et du Boulonnais. [Prolongation southwards of the Pas de Calais Coal Measures, and Correlation of the Auchy-au-Bois and Boulonnais Series.] *Mém. Soc. Sci. Agr. Arts Lille*, sér. 4, t. v.

* The formations range from Keuper to Portlandian. Measurements of beds, lists of principle fossils, & notes on the many faults are given.

Broch, Dr. O. J. Le royaume de Norvège et le peuple norvégien. Rapport à l'Exposition universelle de 1878 à Paris. [Norway and the Norwegians. Report to the Paris Exhibition.] 8vo. *Christiania and Paris.*

Brocchi, P. Excursions de la Société géologique de France dans le Var et les Alpes-maritimes. [Excursions in the Var and the Alpes-maritimes.] *Ann. Club alp. Franç.* ann. 4, p. 521.

Brögger, W. C. Om paradoxidesskifrene ved Krekling. [*Paradoxides* schists at Krekling, not far from Kongsberg, Norway.] *Nyt Mag. Nat.* bd. 24, no. 1, pp. 18–88; 6 pls.

Gives a detailed account of the stratification (with many sections), and a list and description of the fossils found in the *Paradoxides*-beds of Norway, most of which are figured. *Liostracus Linnarsoni*, *Elyx latilimbatus*, *Conocephalites ornatus*, *Anomocare* (?) *magnum*, *Ellipsocephalus circulus*, *Arionellus primævus*, *Agnostus Nathorsti*, *Agnostus incertus*, *Agnostus truncatus*, *Hyolithes plicatus* are new species. Concludes with a comparison between the Norwegian *Paradoxides*-beds and corresponding deposits in other countries, especially Sweden. E. E.

Brylinski, M., and **G. Lionnet.** Phosphates de Chaux fossiles. Géologie et Origine, Applications en Agriculture. [Fossil Phosphates of Lime. Their Geology and Origin.] *Bull. Soc. Géol. Norm.* t. iv. pp. 3–317; 7 woodcuts.

Describe European localities where deposits of phosphate of lime occur. Those in the older rocks in Chaps. i. ii., those of Jurassic age in Chap. iii., the Cretaceous in Chap. iv., and the Tertiary in Chap. v. Chap. vi. is occupied with the conclusions drawn from the facts previously stated. Phosphate nodules occur chiefly in strata of a compact nature, like clays or marls; they are commonly associated with plentiful organic remains; and the nodule-beds are generally found on the limits between different formations. Organic matter has been the chief source in all sedimentary rocks. The conditions under which the calcic phosphate has been precipitated are examined.

The second part treats of the composition of soils, and their want of phosphoric acid. Fossil phosphates; conversion into superphosphatés, their fabrication, action, and value; analyses and tests; imports and exports of France, &c. A. J. J-B.

Bücking, Hugo. Die geognostischen Verhältnisse des Büdinger Waldes und dessen nächster Umgebung, mit besonderer Berücksichtigung der tertiären Eruptivgesteine. [Geology of the Budinger Wald district, with Special Reference to its Tertiary Volcanic Rocks. Part 1.] 17. *Ber. oberhess. Ges.* pp. 49–91, pl. ii. (sections).

Describes the characters, extension, &c. of L. and U. Permian, L. and M. Trias, Eocene, and L. Miocene, with basalt, lignite, and ochre in the last. W. H. D.

Burat, Amédée. Société des Houillères de Blanzy. Situation de ses Etablissements en 1877. [The Blanzy Collieries.] 4to. *Paris.* Pp. xiii, 154, pls. ii. (geol. map), iii. (sections).

Chap. i. History; describes the geological map (14 divisions), pp. 1–7. ii. Lie of the coal in the claims of the Blanzy Co., pp. 31–60, with analyses of coals. W. W.

Cafici, G. Da Vizzini a Licodia; note geologiche. [Geological Notes from Vizzini to Licodia.] Pp. 36. 8vo. *Syracuse.*

——. Studii sulla geologia del Vizzinese. [Geology of the Vizzini district.] Pp. 23. 4to. *Catania.*

Calderon y Araña, Salvador. Ofita do Trasmiera. [Serpentine of Trasmiera.] *An. Soc. Españ. Hist. Nat.* t. vii. pp. 27–34, woodcut (section).

——. Contribuciones al Estudio de la Fosforita de Belmez. [Phosphorites of Belmez.] *An. Soc. Españ. Hist. Nat.* t. vii. pp. 35–51.

i. A general notice of the deposit. ii. Characters. iii. Gisement (with 5 figs., plans and sections). iv. Origin.

Canavari, —. Le grotte di Sant' Eustachio presso Sanseverino-Marche, appunti geologici sull' Appennino centrale. [Cave of St. Eustace, Central Apennines.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 261–271.

——. Cenni geologici sul Camerinese e particolarmente su di un lembo titonico nel Monte Sanvicino. [Geology of the Camerino, particularly the Tithonian of Mt. Sanvicino.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 488–498, woodcut (section).

Cannat, —. Notes sur l'excursion du lundi 21 Mai à Narbonne, Armissan et la Clape. [Excursion Notes.] *Bull. Soc. Sci. Nat. Béziers*, ann. 2 (1877), pp. 70–72.

Chiefly geological.

Capellini, Prof. G. Il calcare di Leitha, il Sarmatiano e gli Strati a Congerie nei monti di Livorno, di Castellina Marittima di Miemo e di Monte Catini. [Leitha Limestone, Sarmatian and Congerian Beds in the Tuscan Hills.] *Atti R. Ac. Linc.* ser. 3, *Trans.* vol. ii. pp. 111, 112, and *Mem.* pp. 275–291.

Notes the range, fossils, &c. of the subdivisions, and correlates the Italian with Austrian and Russian beds by means of their fossils.

——. Della pietra leccese e di alcuni suoi fossili. [The Lecce Stone and some of its Fossils.] *Mem. Ac. Sci. Ist. Bologna*, ser. 3, t. ix. pp. 34; 3 pls.

Carez, Léon. Sur la présence de fossiles marins dans les sables de Rilly-la-Montagne. [Occurrence of Marine Fossils in the Sands of Rilly-la-Montagne.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 179–183.

Notes of new observations tending to prove the synchronism of the Sands of Châlons-sur-Vesle with the Rilly Limestone. The L. Eocene shore-line ran between Rilly and Châlons-sur-Vesle. Sections and lists of fossils are given. (See **Eck**, p. 63.) G. A. L.

Carez, Léon. Sur l'extension des marnes marines de l'étage du Gypse dans l'Est du bassin de Paris. [Extension of the Marine Marls of the Gypsum Stage in the E. Paris Basin.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 183–189 ; 1 fig. in text.

Gives a detailed section of the hill of Blesmes (Aisne), together with a descriptive list of the fossils found in the so-called marl.

Carstens, C. D. Helgoland und Norderney in geologischer Beziehung. [Geological Relations of Heligoland and Norderney (Hanoverian Coast).] *Sitz. Isis Dresden*, pp. 5–11.

Compares the sand-dunes, &c. of these and other North Sea islands.

Cathrein, Dr. A. Die geognostischen Verhältnisse der Wildschonau. [Geology of the Wildschonau.] *Zeitschr. Ferdinand. Innsbrück*, Folg. 3, Bd. 21, sections in text.

The formations mentioned as occurring in the Wildschonau district of the Tyrol (between Inn and Kelbach) are micaceous schists, the Wildschonau schists, the Schwarzer Kalk, the Bunter, Muschelkalk, Keuper, Drift, Alluvium, and eruptive rocks (Gabbro, Chlorite-Gabbro, and Diallage-Serpentine). G. A. L.

Chalon, P. Excursions des 10 mars, 12 mai et 10 juin, aux environs de Bassan, à Pézenas, au mont Liansson (botanique—géologie). [Excursions to Bassan, Pézenas, and Mt. Liansson.] *Bull. Soc. Sci. Nat. Béziers*, ann. 2.

Chambrun de Rosemont, A. de. Étude sur la plage de Nice. Son état ancien et son état présent; La brèche quaternaire de Santenay. [Past and Present of the Nice Coast; Quaternary Breccia of Santenay.] Pp. 37. 8vo. *Nice.*

Chaper, —. Notice sur les houillères de Dombrowa. [Account of the Collieries of Dombrowa (Poland).] Pp. 23. *Paris.*

Chavannes, S. [Gypsum of Ollon and Bex.] *Bull. Soc. Vaud. Sci Nat.* sér. 2, vol. xv., *Proc.-verb.* pp. 81–87.

Describes caverns, subterranean streams, &c. in Eocene gypsum-rock.

——. Note sur le Gypse et la Cargneule des Alpes Bernoises. [On the Gypsum and Cargneule of the Bernese Alps.] *Act. Soc. Helv. Sci. Nat*, for 1877, p. 215.

Choffat, P. Note sur les soi-disant calcaires alpins du Purbeckien. [The so-called Alpine Purbeck Limestones.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 564–566.

Certain pebbles of black limestone occurring in beds of Purbeck age were regarded as of Alpine origin by **Lory** (and previously by **von Buch**). Near St. Claude, in the Jura, the author has found similar pebbles in Portlandian and Valanginian beds, and in Kimmeridgian near Moutier, in the Bernese Jura. In the railway-cutting between the last place and Delémont, at La Charrue, a black limestone, whence pebbles of this kind could easily be formed, was noticed. A section is given. G. A. L.

——. Esquisse du Callovien et de l'Oxfordien dans le Jura occidental et le Jura méridional, suivie d'un Supplément aux couches à *A. acanthicus* dans le Jura occidental. [Callovian and Oxfordian of the Jura, &c. range.] Pp. 141, map and section. *Mém. Soc. Emul. Doubs*, sér. 5, t. iii. pp. 146, plate.

Relates to the Callovian and Oxfordian beds, which show two facies, Argovian at the ends of the chain, and Franche Comté facies at the middle. The Callovian is divided into two zones, that of *Ammonites macrocephalus* and that of *A. anceps* and *A. athleta.* The Oxfordian shows also two chief facies, the Franche Comté is (*a*) *A. Renggeri* marl, (*b*) "Chailles" with Myaceæ, surmounted by (*c*) the *Pholadomya exaltata* horizon. The Argovian type is (*a*) Birmensdorf sponge-beds, (*b*) Effingen beds, (*c*) Geissberg beds with Myaceæ. Above the Oxfordian is the *A. bimammatus* or *Hemicidaris crenularis* zone, with two facies at different parts of the chain. Detailed sections are given in support of the classification adopted, and views of former writers are corrected. The n. sp. *Terebratula Etalloni*, from Birmensdorf beds at St. Claude, is described. An Appendix controverts the position in which **M. Dieulafait** puts the *A. tenuilobatus* beds. E. B. T.

Chouquet, —. Vestiges de l'industrie humaine dans le Diluvium de la vallée de la Marne. [Traces of Human Industry in the Drift of the Valley of the Marne.] *Mat. Hist. Homme*, sér. 2, t. ix. p. 162.

Ciofalo, Prof. S. Poche parole sui terreni dei dintorni di Termini-Imerese. [Rocks near the Termini-Imerese.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 114–116.

Jurassic, Cretaceous, Eocene (3 zones), Nummulitic?, Miocene, Pliocene.

——. Alcuni osservazioni sul miocene di Ciminna. [Miocene of Ciminna.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 281–285.

Gives 3 woodcut sections and a list of fossils.

Clar, Dr. C. Mittheilungen aus Gleichenberg. [Notes from Gleichenberg.] *Verh. k.-k. geol. Reichs.* pp. 122, 123.

Notices the geology of the country immediately surrounding the mineral springs, as shown by recent borings. Trachytes and other eruptive rocks and Sarmatian beds occur chiefly. G. A. L.

Clemente, Simon de Rojas. Datos geologicos del Reino de Granada. [Geology of the Kingdom of Granada.] *Bol. Com. map. geol. Españ.* t. v. pp. 163–165.

Reprint from *Semañario de Agricultura*, t. 18 (1805), describing mines of "piedra pomez."

Cogels, Paul. Considérations nouvelles sur les systèmes boldérien et diestien. [Bolderian and Diestian Systems.] *Ann. Soc. Mal. Belg.* t. xii. pp. 1–24.

Cole, Rev. E. M. Age of the Rocks of Monte Generoso. *Geol. Mag.* dec. ii. vol. v. pp. 378, 379.

Asks for the English equivalents of divisions of the "Jura Lombard." (See **Lebour**, p. 83.)

Collenot, —. Du Phosphate de chaux dans l'Auxois. [Phosphate of Lime in Auxois.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 671–687.

The phosphate occurs in a ferruginous bed overlying the Limestone with *Gryphæa arcuata* of Auxois (*i. e.* a district comprised within the arrondissements of Semur and Beaune, in Côte-d'Or, and of Avallon, in Yonne). The deposit is worked, and is probably due to hydrothermal action. G. A. L.

Collot, L. Sur une Carte géologique des environs d'Aix-en-Provence. [Note on a Geological Map of Aix-en-Provence.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 448–465.

The framework of the district consists of Jurassic and Neocomian beds. Lists of fossils from these beds are given. Above are Tertiary beds, the origin of which is noticed. W. W.

——. Description des terrains miocènes marin et lacustre supérieur des environs d'Aix. [Description of the Marine and Lacustrine U. Miocene of the country round Aix.] *Rev. Sci. Nat.* pp. 35.

Contejean, Ch. Origine et répartition du calcaire dans les sables maritimes. [Origin and Distribution of Calcareous Matter in Marine Sands.] *Compt. Rend.* t. lxxxvi. pp. 500–503.

The sand dunes of Pointe de la Coubre (Charente-Inférieure) are richer in carbonate of lime at the top than at the foot. The carbonate of lime is derived from broken shells. G. A. L.

Coquand, —. [Geological Importance of the Rocks of Provence.] *Bull. Soc. Géol. France*, sér. 3, ~~v. t.~~ t. v. pp. 762–764. t. v. /

Summarizes the chief geological features of the province, more especially as to the Departments of Var and the Alpes-maritimes. Notices the industrial applications of some of the rocks. G. A. L.

Coquand, —. Description des terrains à Pétrole et à Ozokérite du versant septentrional du Caucase. [Petroleum and Ozokerite beds of the northern flanks of the Caucasus.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 86–99.

Summarizes his results as to the Tertiaries of the Caucasus as follows:—*Pliocene*: Astian Beds: Taman Peninsula, undisturbed. *U. Miocene*: Congeria Beds (Œninghian): Cliffs of Kamysch Bouroun, Taman Peninsula. *L. Miocene*: Falunian, &c.: neighbourhood of Kertch and Kadadji, Taman Peninsula. *U. Oligocene*: Stampian: the petroleum and asphalt horizon equivalent to that of the Aix gypsums. *L. Oligocene*: Fucoid grits, &c.: equivalent to the gypsum of Montmartre and Gargas. *Eocene*: Nummulite Limestones and Marls. G. A. L.

Cordella, A. La Grèce sous le Rapport Géologique et Minéralogique. [Geology and Mineralogy of Greece.] Pp. 188. 8vo. *Paris.*

In pp. 1–72 sketches the orography, and describes the Cretaceous, Eocene, Miocene, Pliocene, and Quaternary rocks, glancing at their more important fossils. These beds are underlain by metamorphic and igneous rocks, with serpentine, &c. The modern volcanic islands are described, with accounts of eruptions. Pp. 73–98 contain a summary account of the mineral springs. The rest describes the deposits of gold, silver, lead, zinc, copper, iron, chromium, manganese, lignite, petroleum, bitumen, sulphur, salt, alum, marbles, millstones, emery, magnesite, meerschaum, gypsum, asbestos, barytes, puzzuolana, obsidian, building-stones, slate, lithographic stones, grindstones, alabaster, brick-earths, ochre, fuller's earth, kaolin, and fireclays, giving statistics for 1877 and a short bibliography. W. H. D.

Corneliussen, O. A. Næverhaugens jernglansforekomster. [Iron-ore Deposits of Næverhaugen, Norway.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 2–15.

An answer to a paper by **Gumælius,** see GEOLOGICAL RECORD for 1877, p. 71.

Cornet, F. L. Catalogue spécial de l'industrie minérale belge à l'Exposition universelle de 1878. La Belgique minérale. [Mineral Department of the Belgian Exhibits at the 1878 Exhibition.]

Enlarges on the distribution of iron in the various formations of Belgium. Describes the Bleyberg lead-deposits.

——. Sur la rencontre d'ossements fossiles d'Iguanodon dans un accident du terrain houiller de Bernissart. [Bones of Iguanodon in a Fault in Coal Measures at Bernissart.] *Ann. Soc. Géol. Belg.* t. v. pp. cv–cviii.

The fault is filled with lignitiferous clay containing many bones, Concludes that this clay and the accompanying sand, which are found at the base of the Cretaceous beds in Hainault, are Wealden. W. W.

Cornet, F. L., and A. Briart. Sur la Craie brune phosphatée de Ciply. [Brown Phosphatic Chalk of Ciply.] *Ann. Soc. Géol. Belg.* t. v. pp. 11–22.

Notice their previous researches on the subject and the work of chemists (with analyses). This chalk contains no flints, or but very few, in the upper part, whilst downwards flints increase in quantity. An unconformity between two underlying divisions of the chalk is noticed, and the range of the Ciply chalk is traced. W. W.

Cortazar, D. de. Expedicion Geologica por la Provincia de Toledo en 1877. Ditto, 1878. [Geological Excursions through Toledo.] *Bol. Com. map. geol. Españ.* t. v. pp. 139–144, 321–327, pl. D (map).

Notes granite, Cambrian (with galena, gold-quartz, and manganese), Trias, Cretaceous, Tertiary, and Quaternary beds.

Cossa, A. [Thallium, &c., Lipari Is.] *Atti R. Ac. Linc.* ser. 3, *Trans.* vol. ii. pp. 12–14, 34, 35. See notice from another source in the GEOLOGICAL RECORD for 1877, p. 229.

Cotteau, G. Observations sur les Fossiles des terrains tertiaires moyens de la Corse et notamment sur les Échinides. [Middle Tertiary Fossils of Corsica, especially the *Echinidæ*.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 71–76.

Recognizes six zones in the Mediterranean Miocene basin of Bonifacio, which presents the fullest development of the beds of that age. The zones are (in ascending order):—1, that of *Corals*; 2, of *Clypeaster*; 3, of *Pecten Bonifaciensis*; 4, of *Pecten cristatus*; 5, of *Fusus* and *Pleurotoma*; and 6, of *fish-teeth*. There are 45 species of Echinids in the Corsican Miocene; of these, 26 are known elsewhere in beds of the same age, the rest are peculiar to Corsica. G. A. L.

——. L'Exposition géologique au Hâvre. [Geological Exhibition at Havre.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 66–73.

Account of the collections brought together by the Geological Society of Normandy for the Hâvre Meeting of the French Association.

——. La Géologie au Congrès du Hâvre. Pt. 2. *Bull. Soc. Sci. Hist. Nat. Yonne*, sér. 2, t. xii. p. 173.

Credner, H. Das Oligocän des Leipziger Kreises. [The Oligocene round Leipzig.] *Zeitsch. deutsch. geol. Ges.* Bd. xxx. p. 615–662, pls XXIII., XXI

In this neighbourhood there is an U. Oligocene Brown-Coal formation separated from the N. German L. Oligocene Brown-Coal formation by the marine M. Oligocene beds. Describes & figures 2 new varieties of Aporrhais speciosa (Margerini and megalopolitana). G. A. L.

Credner, Prof. Ueber den geologischen Bau der Gegend von Ehrenfriedersdorf und Geyer im Erzgebirge. [Geological Structure of the neighbourhood of Ehrenfriedersdorf and Geyer.] *Sitz. nat. Ges. Leipzig*, 5 Jahrg. pp. 23–26.

Gneiss, mica-schist, phyllite, granite, &c.

Crosby, Prof. C. E. Vesuvius and the Surrounding Country. *W. Rev. Sci. Ind.* vol. ii. pp. 77–91.

Describes the Grotto del Cane, the Solfatara, the sunken temple of Jupiter Serapis, and Monte Somma, and treats of the source of volcanic heat and mode of formation of volcanic cones. W. H. D.

Damon, R. Wayside Notes in Travels over Europe.—The Great Northern Drift. *Geol. Mag.* dec. ii. vol. v. pp. 403–405.

Notes the Boulder Drift along the route to Russia by Königsberg or Warsaw. The boulders increase in size from the German frontier towards St. Petersburg. Many of the boulders seen were hundreds of tons in weight. G. A. L.

Dathe, E. Section Geringswalde. Blatt 61. [Explanation of the Geringswalde Sheet (61) of the Geological Survey of Saxony.] *Erläut. geol. Specialkarte Sachs.* Pp. 57. 8vo. *Leipzig.*

Describes Archæan granulite, gneiss, serpentine, mica-schist and clay-slate, M. Rothliegende porphyrite, L. Oligocene, Diluvium, and Alluvium, giving many borehole-sections, &c. in the last three. W. H. D.

Daubrée, Prof. A. Rapport sur l'intérêt que présente la conservation de certains blocs erratiques situés sur le territoire français, et sur l'ouvrage de **MM. Falsan** et **Chantre**, relatif aux anciens glaciers et au terrain erratique de la partie moyenne du bassin du Rhône. [On the Preservation of French Erratic Blocks, and on **Falsan** and **Chantre's** work on the Ancient Glaciers and Drift of the Central Part of the Rhône Basin.] *Compt. Rend.* t. lxxxvi. pp. 565–569; *Ann. Club alp. Franç.* ann. 4, p. 343; and *Mat. Hist. Nat. Homme*, sér. 2, t. ix. p. 97.

The Report of a Committee appointed by the Mineralogical Section of the French Academy of Sciences in favour of the preservation of erratic blocks of special scientific interest. G. A. L.

Debray, H. Communications diverses, au sujet des tourbières. [Turbaries.] *Ann. Soc. Géol. Nord*, t. v. pp. 125–135.

Discusses the remains of Beavers, Whales, and Insects in the peat, and mentions the discovery of a human skeleton in the turbaries of Aveling. Notes the condition and qualities of the woods of various trees found in these fens. A. J. J-B.

Degrange-Touzin, —. Excursion dans la Région du Mont-Perdu (Hautes-Pyrénées et Haut-Aragon). [Excursion to Mt. Perdu, Pyrenees.] *Act. Soc. Linn. Bordeaux*, vol. xxxii. pp. 266–274. [Though the no. is dated as published in 1878, this communication bears the date January 6, 1879.]

A general account of the geology of the range.

Delfortrie, E. Abaissement du Feu de Cordouan. Réponse péremptoire au mémoire de M. Henri Artigue ayant pour titre: Étude sur l'Estuaire de la Garonne, etc. [Sinking of the Lighthouse of Cordouan.] *Act. Soc. Linn. Bordeaux*, vol. xxxii. pp. 79–85.

Contends that there has been sinking, and that the changes of the coast are not due merely to erosion and shifting of sands.

Delvaux, E. Note sur quelques Ossements fossiles recueillis aux Environs d'Overlaen, près de Tirlemont, et observations sur les formations quaternaires de la contrée. [Fossil Bones from Overlaen, near Tirlemont. Quaternary Beds of the District.] *Ann. Soc. Géol. Belg.* t. v. pp. 48–55, pl. i. (section and profile).

Gives a list of the bones (rhinoceros, horse, deer, and ox) found under blocks of rock in two quarries, and of five species of shells from loam. The enamel on the blocks is due to a siliceous deposit. The Hesbayan loam consists of an upper brown part, which sometimes rests unevenly on the lower yellow part. W. W.

——. Compte-rendu de la troisième Journée. [Third Day. Excursion to Limburg.] *Ann. Soc. Géol. Belg.* t. v. pp. clv–clxv; 3 woodcuts (sections).

Describes the section of a railway-cutting on the line from Tongres to St. Trond, near the former place (in Drift, Henis Clay, and Sand), a road-cutting near Neerepen (Drift and Rupelian) and Grimmertingen (Tongrian), and a sand-pit at Neerepen. Gives list of fossils. W. W.

Depontaillier, Jules. Liste des principales espèces du Pliocène des environs de Cannes. [List of the chief Pliocene Species of the country round Cannes.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 778–784.

Gives the distribution of species in the Lower Astian of Biot and Vaugrenier (=Plaisancian), in the Upper Astian or Astian proper of Abadie Mill, in the Post-Pliocene of Biot and Vaugrenier, and in the clays and sands of various other neighbouring localities. G. A. L.

Dewalque, G. [Remarks on Specimens of Fossils from near Frepin, on the Right Bank of the Meuse, Vienna, etc.] *Ann. Soc. Géol. Belg.* t. v. pp. lx–lxii, c, ci.

——. [On Specimens from the Hervian Argillites from the Railway-cutting at Polinard Cross.] *Ibid.* pp. lxxx, lxxxi.

The cutting is 18 metres deep, and shows 18 beds of argillite, of all of which a summary analysis by **M. Reuléanor** is given.

——. Note sur le sondage de Furnes, d'après les échantillons envoyés par M. Englebert. [The Furnes Boring.] *Ann. Soc. Géol. Belg.* t. v. pp. cviii, cix.

Gives a section of the beds, to a depth of over 27 metres, and a note of the commonest shells found, all of recent species.

Dewalque, G. [On a Calcareous Concretion from Kinkempois.] *Ann. Soc. Géol. Belg.* t. v. pp. cix, cx.

——. [Note of Excursion to Andenne.] *Ibid.* p. cx.

Dewalque, G., G. Hock, and Ad. Firket. [Specimens from the Coal Measures.] *Ann. Soc. Géol. Belg.* t. v. pp. lxxxi, lxxxii.

The specimens are of *Lepidophloïos macrolepidotum.* **M. Firket** gives details of the position of the beds at Andenne.

Dieulafait, —. Étude sur les étages compris entre l'horizon de l'*Ammonites transversarius* et le Ptérocérien, en France et en Suisse. [Divisions comprised between the *Amm. transversarius* horizon and the Pterocerian in France and Switzerland.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 111–142.

A discussion of the subdivisions of the Corallian. The *Ammonites tenuilobatus* zone is shown to everywhere underlie the L. Corallian, and to be the equivalent of Tombeck and Rayer's *Belemnites Rayeri* zone. The divisions recognized are given thus:—Pterocerian: Astarte Limestone; U. Corallian; M. Corallian; Former *Amm. tenuilobatus* zone of Tombeck; L. Corallian; Zone of *Amm. tenuilobatus*; *Ammonites Babeanus* zone; *A. transversarius* zone. G. A. L.

Doelter, Dr. C. Die Eruptivgesteine des westlichen Südtirols. [The Eruptive Rocks of Western S. Tyrol.] *Verh. k.-k. geol. Reichs.* pp. 349–351. And in Lepsius's work *Das westliche Süd-Tirol. Berlin.* (See *post*, p. 84.)

The rocks are: tonalite and granite, of Azoic age; quartz-porphyry, of Permian age; microdiabase and porphyrite, of Triassic age; nonesite, of the age of the Raibl beds. G. A. L.

——. Der Vulcan Monte Ferru auf Sardinia. [The Mt. Ferru Volcano, Sardinia.] *Denkschr. k. Ak. Wiss. Wien*, Bd. xxxviii. Abth. 2, pp. 193–214 (geol. map). Translated into Italian in *Bol. R. Com. geol. Ital.* vol. ix. pp. 406–429.

Describes the structure of the district, which is composed of rhyolite, trachyte, andesite, basalts, tuffs, and lavas of various descriptions, with Pliocene and Alluvium. W. H. D.

Dokutschaew, —. [River-valley Formation in European Russia.] *Trudi S. Peterb. Obsch. Estest.* knj. 9.

Dollfus, G. Les Sables de Sinceny. [The Sinceny Sands.] *Ann. Soc. Géol. Nord*, t. v. pp. 5–41.

Refers to a note in the last vol. (p. 19) where he identified a certain deposit with the Oldhaven Beds. Now recognizes this horizon in the Paris Basin, between the 'Sables de Cuise' and the Lignites du Soissonnais, where it had been overlooked; proposes the name of Sinceny Sands for this deposit; indicates their position in England; describes the section at Sinceny, on the Oise, and gives a list of the fossils there.

Other localities in the Soissonnais and N. France are mentioned, and the possible existence of the beds at Ostende is pointed out. Concludes with remarks on the fauna. A. J. J-B.

Dollfus, G., and **G. Vasseur.** Coupe géologique du chemin de fer de Méry-sur-Oise entre Valmondois et Bessancourt (Seine-et-Oise). [Railway-section between Valmondois and Bessancourt.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 243–256, pl. ii. The continuation, pp. 257–305, published in 1879. All noticed below, the whole having been published separately (pp. 64), with the addition of an Atlas (9 sheets of section, on a large scale), *Paris.* Price 20 francs.

Part 1, Description of the beds, gives details of 5 sets of sections, with lists of fossils. Part 2. Comparisons and Classification (by **G. Dollfus**). Under the following heads:—*Calcaire grossier* (L., M., and U.), giving an account of the dolomite therein, with 5 analyses by **J. Ogier**; Middle Sands; St. Ouen limestone; Gypseous series, under four divisions; Sands of Étampes, under four divisions; Millstones of Montmorency; Quaternary beds; General Conclusions, with a classified table of the beds (U. Oligocene to L. Eocene). The plate is on a scale of 1 to 1000 vertical and 1 to 10,000 horizontal, the scale of the atlas being ten times as large. W. W.

Donaire, F. M. Trabajos Geológicos ejecutados el año de 1877 en la Provincia de Avila. [Geological Work in Avila.] *Bol. Com. map. geol. Españ.* t. v. pp. 195–200.

The province consists of granitic and metamorphic (? Silurian) rocks, with isolated Tertiary and Quaternary beds. Traces of galena and copper are noted. W. H. D.

Drasche, Dr. R. von. Ueber den geologischen Bau der Sierra Nevada in Spanien. [Geological Structure of the Sierra Nevada, Spain.] *Verh. k.-k. geol. Reichs.* pp. 390–392.

Abstract of a paper to be published in the 'Jahrbuch.'

Dufour, —. Premiers indices d'une Flore fossile dans le Calcaire grossier d'Arthon (Loire-Inférieure). [Fossil Flora in the Calcaire Grossier of Arthon.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 540–542. and Ann. Soc. acad. Nantes, pp. 88-91.

Announces the discovery of plant-remains somewhat similar to those in the Calcaire Grossier of Bagneux, near Paris. The plants occur in nodules overlying beds full of marine shells, and seem to be of littoral kinds, with perhaps a few algæ. G. A. L.

Dufour, E. Réponse à M. Vasseur au sujet de l'âge des dépôts éocènes du Champ-Pancaud en Campbon (Loire-Inférieure). [Reply to M. Vasseur respecting the Age of the Eocene Deposits of the Champ-Pancaud in Campbon.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 50, 51.

Disagrees with M. Vasseur only when the latter refers the lowest beds of the spot in question to the Upper Calcaire-Grossier, to which the higher beds undoubtedly belong. (See **Vasseur,** *post.*) G. A. L.

Dufour, E. Examen des dépôts éocènes d'Arthon-Chémeré (Loire-Inférieure). [Examination of the Eocene Beds of Arthon-Chémeré.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 52–63, pl. i. (plan and sections). and Ann. Soc. acad. Nantes, p. 314.

These Eocene limestones occupy an area of about 10 sq. kilometres to the S. of Campbon (23 kil.), on the opposite side of the Loire. The beds belong to the L. and M. Calcaire Grossier. The sections in various quarries are described, and full lists of fossils given. G. A. L.

Dulignon-Desgranges, —. [Report of the Fête at Medoc.] *Act. Soc. Linn. Bordeaux*, vol. xxxiii. p. xix.

Pp. xxii–xxxi are geological. With notes on the cuttings of the railway to Panillac, by **M. Benoist**; and on the substratum of the St. Estèphe limestone, by **E. H. Brochon.** W. W.

——. [On a Well, and on the Shell-bed of Bordeaux.] *Act. Soc. Linn. Bordeaux*, vol. xxxii. p. lxxxi.

——. Matériaux concernant la Question de l'Affaissement du Littoral Girondin. [Sinking of the Girondin Coast.] *Act. Soc. Linn. Bordeaux*, vol. xxxii. pp. 102–108, pl. iii. (plan and sections).

i. The flints of the shore do not come from sunk spots; ii. An ancient house at Soulac actually covered by the sea. The site of this is a little above low water. W. W.

Dumont, A. Mémoires sur les Terrains Crétacé et Tertiaire. [Cretaceous and Tertiary Formations.] Edited by **M. Mourlon.** Tom. i. Cretaceous Formation. 8vo. *Brussels* (for the Musée Royal d'Histoire Naturelle de Belgique). Pp. 556.

A description of the geological map of Belgium by the late A. Dumont. Includes the latest notes by him. Divides the Cretaceous Formation into the following systems:—Aachenian, Hervian, Nervian, Senonian, Maestrichtian, Heersian (Infra-Landenian). Describes each system in detail, petrologically and stratigraphically, commencing with the Massif of Tournai and Mons, appending a chapter on the depth of the Cretaceous Gulf of Mons, as shown by deep borings. The second part treats of the representatives of the same systems in the district of Hesbaye, on the left bank of the Meuse, and those on the right bank, describing the typical sections of each group of beds. A. J. J-B.

——. Réponse à la Note de M. P. J. J. Bogaert sur les Couches de Charbon découvertes dans le Limbourg néerlandais. [Answer to M. Bogaert on Limburg Coal.] *Ann. Soc. Géol. Belg.* t. v. pp. 3–6.

An answer to criticisms.

Dupont, Ed. Sur les alluvions torrentielles qui se déposent de nos jours sur les plateaux de l'Entre-Sambre-et-Meuse et du Condroz. [Recent Torrential Alluvia in the plains between the Sambre and Meuse and in the Condroz.] *Bull. Ac. R. Belg.* sér. 2, t. 46, pp. 643–658, pl.

Describes a series of alluvial deposits apparently due to excessive rains of unusual occurrence and of very local limits. Describes incidentally the methods pursued by the Officers of the Belgian Geological Survey in mapping superficial deposits. G. A. L.

Ébray, Th. Du synchronisme probable de l'étage valanginien et des étages portlandien et kimméridgien. [Probable Synchronism of the Valanginian with the Portlandian and Kimmeridgian.] *Bull. Soc. Géol. France,* sér. 3, t. v. pp. 567, 568.

Where the Valanginian occurs in its fullest development thê Portlandian and Kimmeridgian are absent.

Eck, André. Sur les Sables blancs et les Marnes lacustres de Rilly-la-Montagne. [White Sands and Lacustrine Marls of Rilly la Montagnè.] *Bull. Soc. Géol. France,* sér. 3, t. v. pp. 426–433.

These sands are the upper part of the Sands of Bracheux or Chalons. Gives details of five sections at Ludes, Rilly la Montagne, Montchenot, Prouilly, and Montagne de Berru, with a general section. The marls overlie the sands, and are overlain by the clays with lignite. W. W.

——. Note sur le Calcaire de Ludes. [Note on the Ludes Limestone.] *Proc.-verb. Soc. Mal. Belg.* t. vii. pp. v–x.

Notes the succession of beds at Ludes, from the Chalk upwards, in 24 divisions, all conformable. The Ludes limestone is above that of St. Ouen. Lists of fossils are given, and the range of the bed traced. W. W.

Erdmann, E. Beskrifning till kartbladet Brefven. No. 63. [Description to Brefven sheet.] *Sver. Geol. Undersökn.* pp. 86; 3 pls.

The varieties of gneiss, mica-schist, granite, diabase, &c., and the glacial and postglacial deposits are described. Two types of diabase in the same dyke. Probability of faults. Evidences are given against the eruptive character of the pegmatite. Notes on the economic value of the rocks, with analyses, by **A. Hasselbom,** of granular limestone and glacial marl. The plates contain two sketch maps (scale 1:300,000), one geological, sections showing gneiss, granite, and pegmatite in their relations to each other, and a number of vertical sections across the åsar. See *post,* under MAPS (**Sweden**). E. E.

——. Iakttagelser rörande krosstensgrus med glacierstenar. [Gravel and Glaciated Stones.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 34–43.

Notes as to the signification of striated stones in a deposit. (See also GEOLOGICAL RECORD for 1877, p. 62.)

Fabre, G. Sur l'âge et la constitution des régions schisteuses du Gévaudan et des Cévennes. [Age and Structure of the Schist Districts of Gévaudan and the Cévennes.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 399–409.

1. Gneiss region between Chaplauroux and La Bastide. The gneiss series is 6000 metres thick at least, and passes upwards into mica-schist, over which in places come talc-schists. The posteriority of the granite to the gneiss and mica-schist is clear. 2. Region of the talcose schists of the Cévennes. These have a wide extension, and have been broken through by the granite. 3. Conclusions. The prints of *Stigmaria*, &c. noticed by Ébray were not in place: the crystalline schists (1) are Azoic (pre-Silurian). W. W.

Fairley, C. C. M. The Westphalian Coal-field. *Coll. Guard.* vol. xxxvi. p. 741, section.

The section is of the Ruhr Coal Basin, Westphalia.

Faly, J. Étude sur le Terrain Carbonifère La Faille du Midi depuis les Environs de Binche jusqu'à la Sambre. [The Carboniferous District, Southern Fault.] *Ann. Soc. Géol. Belg.* t. v. pp. 23–32.

Treats of the Hainault Carboniferous basin. The southern fault brings the Old Red Sandstone against the Coal Measures, the Carboniferous Limestone, and, on the east, Devonian Rocks. Accounts of six sinkings are given; and these, with other sections, enable one to follow the fault for 15 kilometres. W.W.

——. Études Carbonifères Le Poudingue Houiller. [Coal Measure Conglomerate.] *Ann. Soc. Géol. Belg.* t. v. pp. 100–110, pl. 2 (sections).

Notices the three masses of Monceau, of Couillet, and of Courcelles. Describes five longitudinal sections, and concludes from these that the group of beds containing the conglomerate is 500–600 metres from the Carboniferous Limestone. W. W.

Favre, Alphonse. Note sur la Carte Géologique du Canton de Genève. [Geological Map of the Canton of Geneva.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 465–468, 1 fig. in text.

Refers to a then unpublished map, on a scale of 1 : 25,000, and notes that, notwithstanding Benoît's researches, the author still holds that the Miocene Molasse was deposited in fresh or perhaps brackish water. This formation is the lowest in the district, and the only one which has been subjected to upheaval. Describes and gives a section of some of the ancient and Post-glacial alluvial deposits which, with the Miocene Molasse, are the only other rocks of the Canton. In the discussion, **M. Lory** compares the ancient alluvia, Glacial and Interglacial, of Geneva, with the similar ones of Savoy and Dauphiné. G. A. L.

Favre, Alphonse. Sur une Défense d'Éléphant trouvée au Bois de la Bâtie, près de Genève, et sur les Éléphants fossiles recueillis en Suisse. [Elephant's Tusk from near Geneva, and Elephants found in Switzerland.] *Arch. Sci. Phys. Nat.* t. lxxiv. pp. 49–58.

Notes the section of the Bois de la Bâtie, and gives a list of the chief Swiss localities of Elephant-remains, by Cantons, with references to publications. W. W.

Favre, Ernest. Étude stratigraphique de la partie sud-ouest de la Crimée. [Geology of the S.W. of the Crimea.] *Mém. Soc. Phys. Hist. Nat. Genève,* t. xxvi. pt. 1, pp. 15–72, 3 pls. (sections, map).

Jurassic, Neocomian, Cretaceous, Nummulitic, Sarmatian, Quaternary, and Recent beds occur, and are described in detail. Igneous rocks occur sparingly. W. H. D.

——. Note sur la Géologie de la Crimée. [Geology of the Crimea.] *Bull. Soc. Géol. France,* sér. 3, t. vi. pp. 19–22.

Analysis of the work noticed above.

——. Revue Géologique Suisse pour l'année 1877. VIII. *Arch. Sci. Phys. Nat.* t. lxi. pp. 153–233; and separately, p. 84. 8vo. *Geneva, Basle,* and *Lyons.*

Summary of Swiss Geological Literature for 1877.

Feistmantel, K. Ueber die Lagerungsverhältnisse der Eisensteine in der Unterabtheilung D_I des böhmischen Silurgebirges. [The Ironstone of Subdivision D_1 of the Bohemian Silurian.] *Sitz. k. böhm. Ges. Wiss.,* May.

Ferretti, Abbé A. La salse o vulcani di fango e le argille scagliose. [Salt-springs or Mud-volcanos, and the Scaglia Clay.] *Padua.* Abridged, under the title "Sopra i vulcani di fango e le argille scagliose del Modenese," in *Boll. R. Com. geol. Ital.* vol. ix. pp. 174–187.

With analyses of gases and salts.

Fever, —. [On Two Wells, Boulevard de Tourcoing.] *Ann. Soc. Géol. Nord,* t. v. p. 172.

Gives the depths of the beds.

Firket, Adolphe. Sur un nouveau gîte de fossiles crétacés à Hollogne-aux-Pierres. [New Bed of Cretaceous Fossils.] *Ann. Soc. Géol. Belg.* t. v. pp. lxxviii, lxxix.

A quarry has been opened at Hollogne-aux-Pierres in a clayey, sandy, greenish-yellow chalk, very glauconiferous, and with small pebbles of white quartz. This bed seems to show the passage from Senonian to Hervian. The fossils (4 sp.) occur towards the base. W. W.

——. Sur la position stratigraphique du grès houiller de la station d'Andenne, et sur la constitution de la partie inférieure du système houiller à Seilles. [Position of the Coal Measure Sandstone of

Andenne; and on the lower part of the Coal Measures at Seilles.] *Ann. Soc. Géol. Belg.* t. v. pp. lxxxi, lxxxii.

Notices the conglomerate (see below), and two coal seams.

Firket, A. [Eurite of Sept Heures.] *Ann. Soc. Géol. Belg.* t. v. pp. cxiii, cxiv.

E. of the well-known bed is a second, about a metre thick, also in confused stratification in Revinian slates. It may join the former.

——. Sur la position stratigraphique du poudingue houiller d'Amay. [Position of the Coal Measure Conglomerate of Amay.] *Ann. Soc. Géol. Belg.* t. v. pp. cxxi–cxxiii.

This bed is at the same horizon as the conglomerate of Gives, and about 135 metres from the Carboniferous Limestone. The parallelism between the coal-seams at the two places is also noticed. W. W.

——. [Conglomerate from M. Coal Measures, Liége Basin.] *Ann. Soc. Géol. Belg.* t. v. pp. cxxxix, cxl.

The rock (which is composed of white quartz grains up to the size of a pea, pebbles, and flakes of siderite, with a cement of small quartz grains, joined by siderite) seems to be about 750 metres above the Carboniferous Limestone. W. W.

——. Notice sur le Gîte ferro-manganésifère de Moet-Fontaine (Rahier). [Manganese-iron Bed of Moet-Fontaine.] *Ann. Soc. Géol. Belg.* t. v. pp. 33–41.

The bed, at a depth from the surface, consists of carbonate of iron and carbonate of manganese in about equal parts; at the outcrop it shows two divisions, one rich in oxides of iron and manganese, the other of schist and quartz-slate, passing into grits and poor in metals. The oxides are the result of atmospheric alteration. The bed is not a vein, but of the same age as the U. Silurian rocks with which it is associated. Three analyses by **L. Giffard** are given. W. W.

——. Sur la Position stratigraphique du Poudingue Houiller dans la partie ouest de la province de Liége. [Position of the Coal Measure Conglomerate of the W. part of the Liége Province.] *Ann. Soc. Géol. Belg.* t. v. pp. 42–47; see also p. xcvii.

The bed, near Gives, consists of pebbles of white quartz, with a cement of the same composition as the overlying grit (grains of white quartz and black phthanite, with some of felspar). A like bed, but much more irregular, occurs between the grit and an upper series of sandstones and grit. The former bed is separated from the Carboniferous Limestone by 135–140 metres of rock, chiefly schist. W. W.

——. Étude sur les gîtes métallifères de la mine de Landenne et sur la faille silurienne du Champ d'oiseaux. [Metalliferous deposits of the Landenne Mine, and the Silurian Fault of Champ d'Oiseaux.] *Bull. Ac. Roy. Belg.* sér. 2, t. 45, pp. 618–645, folding plate of sections.

1. On the Silurian Fault and lodes of Champ d'Oiseaux (Landenne sur Meuse). 2. Structure and lie of the Hæmatite beds. 3. Epigenic change of oolitic hæmatite into siderite in contact with a vein of pyrites. 4. On the relation between this phenomenon and the metalliferous infilling of the lodes of the Landenne mine. Concludes that the water to which he attributes the metalliferous deposit was charged with carbonic acid. To the action of the last is due the enlargement of the fissures in the Carboniferous age (where the lodes are richest). The thinness of the vein in the shales is referred to the weak action of acid on the rocks. G. A. L.

Fleischhacker, R. Beiträge zur Kenntniss der Tertiär-Ablagerungen der Steiermark.—i. Das Vorkommen mariner Fossilien bei Gleichenberg. [Tertiary Deposits of Styria.—i. Occurrence of Marine fossils at Gleichenberg.] *Verh. k.-k. geol. Reichs.* p. 53.

Notes the discovery of shells belonging to the Miocene Gamlitz-Fauna in a district where hitherto Sarmatian beds alone were known. (See **Hilber**, p. 77.) G. A. L.

Fliche, —. Flore des tufs quaternaires de Resson. [Flora of Quaternary Tuffs of Resson.] *Bull. Soc. Sci. Nancy*, ser. 2, t. iii. fasc. vii. pp. 72, 73.

A preliminary communication. The flora is wholly herbaceous, and seems to indicate a warm period between two glacial periods.

Fond, J. Note sur le terrain houiller du basin de Saint-Étienne. [St. Étienne Coal-field.] *Bull. Soc. Etud. Sci. Lyon*, map.

Fontannes, F. Note sur la présence de dépôts messiniens dans le Bas-Dauphiné septentrional. [Presence of Messinian Deposits in N. Lower Dauphiné.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 542–559; 2 figures in text.

Describes new localities for sections of the St. Ariès group (Messinian I. of Mayer), and that of Visan overlying it unconformably. The Meximieux Flora, being below the former, is therefore shown not to be Pliocene. The *Ostrea cucullata* beds of Dauphiné and Provence are synchronized with the *O. undata* sands of Languedoc, and as a consequence the *Potamides Basteroti* marls of Montpellier, etc. with the *Congeria* beds of St. Ferréol, Mont-des-Pins, etc. G. A. L.

——. Études stratigraphiques et paléontologiques pour servir à l'histoire de la Période Tertiaire dans le Bassin du Rhone. *Ann. Soc. Agric. Lyons.* 8vo: *Paris* and *Lyons*. iii. Le Bassin de Visan-Vaucluse, pp. x, 110, pls. i.–v. (fossils) and A (sections). iv. Les Terrains néogènes du Plateau de Cucuron. [Neogene Beds of the Cucuron Plateau.] Pp. 97, pls. i & ii. (fossils), and plate of sections.

i. Section of La Garde-Adhémar at Nyons, with details of sections and lists of fossils. ii. Description and classification of the Tertiary beds of the Visan Basin. Eocene (sands and clays); Miocene (freshwater limestone); M. Miocene (3 divisions), with lists of fossils; U. Miocene (2 divisions); L. Pliocene (Marine, 2 divisions, and Brackish water), with lists of fossils. iii. Description of new and little-known species of the U. Tertiary beds of the Visan Basin. The following new species and variety of *Pecten* are described and figured:—*Justianus*, *pavonaceus*, *præscabriusculus*, *subbenedictus*, *paulensis*, *lychnulus*, *sub-Holgeri*, *suzensis*, *camaratensis*, *diprosopus*, *amœbeus*, *Fuchsi*, *Escoffieræ*, *cavarum*, var. *Delphinensis*, *nimius*, and *vindascinus*.

i. *Geological Sections*. Describes the five longitudinal sections figured, and another at St. Christophe. Gives the general succession of beds deduced from these sections. ii. *Description and Classification of Beds*, with a table and notes of the fossils. Conclusions (10). iii. Description of new species and varieties:—*Murex subproductus*, *Pollia Tournoueri*, *Cancellaria Druentica*, *C. Gaudryi*, *C. Deydieri*, *Ficula clathrata*, Lam., var. *Cabrierensis*, *Nassa Caudellensis*, *N. Dexivæ*, *N. subduplicata*, D'Orb., var. *Druentica*, *N. sublapsa*, *Pleurotoma Caudellensis*, *Mitra bathmophora*, *Cypræa præsanguinolenta*, *Natica hypereuthele*, *Cerithium Deydieri*, *Fossarus costatus*, Brocchi, var. *crassicostata*, *Trochus prælineatus*, *T. Cabrierensis*, *T. Ayguessii*, *T. angulatus*, Eichw., var. *Druentica*, *Clanculus Araonis*, Bast., var. *valdecincta*, *Arca Rhodanica*, *Diplodonta Fischeri*, *Cardita goniopleura*, *Tapes eurinus*, and *Pholas Luberonensis*, all from the Marls with *Cardita Jouanneti*; *Neritina Dumortieri*, *Succinea primæva* (Matheron), *Limnæa Cucuronensis*, and *L. Deydieri*, from the Marls with *Helix Christoli*. All these U. Miocene species are figured. W. W.

Forbes, H. O. Denudation—Rain and River. *Geol. Mag.* n. s. dec. ii. vol. v. pp. 212–214.

Gives a short historical account of the denudation which has taken place on the Mondegro about Coimbra since the 5th century, and a note on recent denudations on the Tagus at Lisbon. G. A. L.

Fredholm, K. A. Om några strandbildningar inom Norrbotten. [Coast-terraces in the Norrbotten Government, Sweden.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 65–72; 2 plates.

Several terraces, generally consisting of stones, gravel, and sand, are described (figures given). Probably occasioned by coast-ice.

Freytag, —. Das fiscalische Bad Oeynhausen und seine Quellen. [Thermal Springs of Oeynhausen.] *Zeitsch. Berg- Hütt. Salinenw.* Bd. xxvi. p. 275.

Describes the geology of the neighbourhood of Oeynhausen and Neusalzwerk, and the borings made for brine and thermal waters. The original boring put down in search of brine for salt works gave 1855 litres of a brine of 4·26 p. c. of salts a minute, at a temperature of 33° C., from a depth of 610 metres in the Muschelkalk. Two borings of

655 and 627 metres have been made in search of further supplies, the yields of the three in 1876 being about 1120 litres a minute. The composition of the water is nearly that of sea water. Brine of 8 to 10 p. c. derived from flowing springs and shallow borings is used for the production of salt at Neusalzwerk, the yield varying from 2000 to 3500 tons yearly. H. B.

Frič, Dr. Anton. Studien im Gebiete der böhmischen Kreideformation. Die Weissenberger und Malnitzer Schichten. [Cretaceous Rocks of Bohemia. The Weissenberg and Malnitz Beds.] *Arch. nat. Land. Böhm.* (*Arb. geol. Abth.*) Bd. iv. no. 1, pp. 153.

The Wissenberg Beds (formerly known as the Pläner-sandstone, Pläner of the Wissenberg, Opuka beds, etc.) are divided into three parts—The Semitz Marl, the Dřinow "Kudlen," and the Wehlowitz Pläner. *Inoceramus labiatus* best characterizes the Series. The overlying Malnitz Beds are also divided into three stages—the green sandstone of Malnitz, the Laun "Knollen," the Malnitz *Avellana* Beds. The equivalence of this series with foreign Cretaceous divisions is not yet settled. G. A. L.

Friedrich, P. A. Das Rothliegende und die basischen Eruptivgestein der Umgebung des grossen Inselsbergs. [The Rothliegende and Basic Eruptive Rocks of the great Island Mountain.] *Zeitsch. Gesammt. Nat.* folg. 3, Bd. iii. pp. 719–770, pls. 20, 21 (map and fossil fish).

Describes the district, consisting of granite, gneiss, mica-slate, Coal Measures, Permian, and Bunter. *Elonichthys Fritschii*, n. sp., is described from Rothliegende of Otterbach. The eruptive rocks (Permian) are described in detail (p. 28), with many analyses. W. H. D.

Frossard, —. [Limurite in the Pyrenees.] *Bull. Soc. Ramond,* t. xiii. p. 119.

Records the occurrence of crystalline schists containing oxinite in cavities and fissures at Pic-d'Ereslitz, Barèges, Trélons valley, Pic-d'Arbizon, and above the Chiroulet hut, on the road leading to the Lac-Bleu. G. A. L.

Fuchs, Theodor. Zur Flyschfrage. [The "Flysch" Question.] *Verk. k.-k. geol. Reichs.* pp. 135–142.

A reply to Herr Paul, who denied the eruptive origin of the "Flysch." Contends for the correctness of this view.

——. Intorno alla posizione degli strati di Pikermi. [Position of the Pikermi Beds.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 110–114.

Refers the Pikermi beds to the Pliocene.

——. Die Salse von Sassuolo und die Argille scagliose. [The Mud Volcanoes of Sassuolo (Modena) and the Scaglia Clay.] *Sitz. k. Ak. Wiss. Wien, Bd.* lxxvi. pp. 231–239.

The Scaglia Clay, an unctuous clay with stones and boulders, is produced by the mud-volcanoes, which rise through Pliocene beds.

Fuchs, T. Ueber die Entstehung der Aptychenkalke. [Origin of the *Aptychus* Limestone.] *Sitz. k. Ak. Wiss. Wien*, Bd. lxxvi. pp. 329-334.

Describes the probable conditions of deposition.

——. Ueber den Flysch und die Argille scagliose. [On the Flysch and the Scaglia Clay.] *Sitz. k. Ak. Wiss. Wien*, Bd. lxxvi. pp. 462-466.

The Scaglia clay is derived from the subjacent Flysch. [This article is discussed by **De Stefani, Bosniaski,** and **Stoppani,** *Proc.-verb. Soc. Tosc. Sci. Nat. Pisa*, vol. i. pp. iii-v; but the Scaglia clay they refer to is a homogeneous clay, breaking into rounded fragments. See also **Stefani,** p. 110.] W. H. D.

——. Ueber eruptive Sande. [Eruptive Sands.] *Sitz. k. Ak. Wiss. Wien*, Bd. lxxvi. pp. 467-470.

The crystalline sands (described as 'geyserian' by **Gras**) of S.E. France and (by **Lorenz**) of Dalmatia are to be regarded as of volcanic origin. W. H. D.

——. Studien über die Gliederung der jüngeren Tertiärbildungen Ober-Italiens. [Younger Tertiaries of N. Italy.] *Sitz. k. Ak. Wiss. Wien*, Bd. lxxvii. pp. 419-480.

Notes on the literature, palæontology, and stratigraphy, with sections and lists of fossils.

Galloway, T. L. On the Present Condition of Mining in some of the principal Coal-producing Districts of the Continent. *Trans. N. Engl. Inst. Eng.* vol. xxvii. pp. 171-201.

Mines of N. France (Aniche, Anzin), of Belgium, of Saarbruck, of U. Silesia, of Bohemia, of Westphalia, with sections of some seams.

Garrigou, Dr. F. La Station thermale de Luchon. [Luchon Thermal Springs.] 8vo. *Toulouse*.

Contains notes on Pyrenean geology.

Gastaldi, B. Sui rilevamenti geologici fatti nel Alpi piemontesi durante la campagna del 1877. [Geological Surveys in the Piedmontese Alps in 1877.] *Atti R. Ac. Linc.* ser. 3, *Trans.* vol. ii. p. 191, *Mem.* vol. ii. pp. 951-959; 2 pls. (section and map).

The anthraciferous formation is between the Pietre Verdi and the Trias; the dolomites are Triassic, Liassic, M. Cretaceous, and Nummulitic. *Apenninite* is a new species of chloritic rock. Pl. 2 is a geological map by **Luigi de Bartolomeis,** 1858. W. H. D.

Gaudry, Albert. Geology of the Island of Cyprus. Translated, by **Capt. F. Maurice**, from *Mém. Soc. Géol. France*, sér. 2, t. vii. Pp. viii, 98; geol. map and 20 plates. Fol. *London.*

Introduction, and list of books having reference to the geology of Cyprus. Part I. is divided as follows:—1. Cretaceous formation (stage of the compact limestones); 2. L. Tertiary series (Macignos); 3. M. Tertiary series (white marl and gypsum); 4. Irruptions of the plutonic rocks and upheavals which have occurred after the formation of the M. Tertiary formations; 5. U. Tertiary series (shelly limestone, sands, and marls); 6. Dislocations which have taken place later than the last Tertiary period; 7. Quaternary series (sand and conglomerate); 8. Phenomena of the present time. Part II. refers to the mineral substances which have been used in the arts:—1. Metals; 2. Materials for building; 3. Hard stones used by jewellers; 4. Various other substances. Part III. is a Catalogue of Fossils. Concludes with notes to the plates and to the text. T. W. N.

——. [Discovery of Mammalian Bones of Quaternary Age in a Sand Pit between Valmondois and L'Isle-Adam.] *Bull. Soc. Géol. France*, sér. 3, t. vi. p. 310.

Announcement of find, with short list of species.

Geinitz, Dr. H. B. Zur Geologie von Dresden. [Geology of Dresden.] In 'Sanitäre Verhältnisse und Einrichtungen Dresdens,' p. 16.

Gemmellaro, G. G. Sui Terreni Cretacei della Sicilia. [Cretaceous Rocks of Sicily.] *Boll. Soc. Sci. Nat. Palermo*, no. 7.

Gesell, Sándor. A Vörösvágás-Dubniki Magy. Kir. Opálbányák Földtani Viszonyai Sárosmegyében. [Geology of the Royal Opal Mines of Vörösvágás-Dubnik, Sáros County.] *Math. Termész. Közlem.* Köt. xv. pp. 213–222; 4 pls.

Describes the mode of occurrence of opal in augite-trachyte.

Giordano, F. Sul sistema usato pel rilevamento della Carta geologica d'Italia. [Methods of the Geological Survey of Italy.] *Atti R. Ac. Linc.* ser. 3, *Mem.* vol. ii. pp. 507–513.

Refers to scales of maps, colours used, and divisions mapped.

Giorgi, Dr. C. De. Appunti geologici sulle miniere di Monte Sferruccio nell' Aquilano. [Mines of Mt. Sferruccio.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 272–280; 2 woodcut-sections.

Godron, D. A. Les cavernes des environs de Toul et les Mammifères qui ont disparu dans la vallée de la Moselle. [Caves around Toul, and the Mammals which have become extinct in the Moselle Valley.] *Ann. Club alp. Franç.* ann. 4, pp. 383–413. (? Ed. 2, pp. 31. 8vo. *Nancy.*)

Gonzalo y Tarin, Joaquin. Reseña Geologica de la Provincia de Huelva. [Geology of the Province of Huelva.] *Bol. Com. map. geol. Españ.* t. v. pp. 1–138, pls. A, B (maps).

Sketches the orography and hydrography, describes the nature, range, &c. of Azoic, Cambrian, Silurian, Carboniferous, Triassic, Miocene, Pliocene, Post-pliocene and Recent deposits, Hypogene and Metamorphic rocks. W. H. D.

——. Nota acerca de la Existencia de la Tercera Fauna Silurian en la Provincia de Huelva. [Third Silurian Fauna in Huelva.] *Bol. Com. map. geol. Españ.* t. v. pp. 311–313.

Records the occurrence of certain Graptolites.

Gosselet, [Prof. J.]. [On Fossils found by M. Courtois.] *Ann. Soc. Géol. Nord,* t. v. pp. 1, 2.

Notes a few species from U. Devonian at Ferrières-la-grande and from Carb. Limestone at Eclaibes.

——. [Supplemental Note on the Porquerie Marl, L. Eocene.] *Ann. Soc. Géol. Nord,* t. v. pp. 2, 3.

——. [Notice of a Boring at La Capelle, Aisne.] *Ann. Soc. Géol. Nord,* t. v. pp. 3, 4.

Passed through Clay, sand, and gravel, 14 feet; Chalk and Marl, 63 feet; Greensand, 12 feet; Blue clay, 2 feet; Black shale, 17 feet.

——. Excursion dans les tranchées du Chemin du Fer de Cambrai au Quesnoy. [Visit to Cuttings on the Railway from Cambrai to Quesnoy.] *Ann. Soc. Géol. Nord,* t. v. pp. 68–72.

These cuttings show thin Tertiary sands below the alluvial clays (Ergeron), and resting on an irregular surface of chalk.

——. Note sur les Sablières d'Arques, près St. Omer. [Sand-pits of Arques.] *Ann. Soc. Géol. Nord,* t. v. pp. 217, 218.

Regards the beds as representing the sands of Ostricourt.

Gosselet, Prof. J., and H. Rigaux. Mouvement du sol de la Flandre depuis les temps géologiques. [Movement of Land in Flanders in Recent Times.] *Ann. Soc. Géol. Nord,* t. v. pp. 218–226.

Discusses the geological and historical evidence regarding the changes in the coast-line of Flanders. Concludes that the sinking which commenced in Glacial times ceased in the Neolithic period, allowing of the formation of a land surface (Neolithic and Gallo-Romanic remains being found in the peat); that a second depression took place in the 4th century, and still continues. A. J. J-B.

Gourdon, —. Le massif de Colomès (Pyrénées espagnoles). [The Colomès Mountains (Spanish Pyrenees).] *Ann. Club alp. Franç.* ann. 4, p. 555.

Grad, Ch. Lacs et réservoirs des Vosges. [Lakes and Reservoirs of the Vosges.] *Ann. Club alp. Franç.* ann. 4, p. 496.
Discusses several geological problems.

——. Recherches sur la formation des Charbons feuilletés interglaciaires de la Suisse. [Formation of Interglacial laminated Coal of Switzerland.] *Bull. Soc. Hist. Nat. Colmar,* ann. 18, 19, p. 47.

——. Une visite aux mines de Wieliczka, en Pologne. [Mines of Wieliczka, in Poland.] *Bull. Soc. Hist. Nat. Colmar*, ann. 18, 19, p. 259.

Grand'Eury, —. Sur des empreintes végétales trouvées dans l'Estérel. [Vegetable Impressions found in the Estérel.] *Bull. Soc. Géol. France,* sér. 3, t. v. pp. 758, 759.
Cites *Walchia*, *Callipteris sphenopteroïdes*, and other Permian forms from the Estérel shales about St. Raphaël (see **Potier**, p. 100).

Granger, —. [On the Rocks from the Canal at Cette.] *Act. Soc. Linn. Bordeaux,* vol. xxxii. p. lx.
Gives a list of 10 fossils, all Mediterranean species.

Grewingk, Prof. —. Die Aussichten und Bedingungen eines zu gründenden baltischen Vereins für Erbohrung nutzbarer Fossilien. [Prospects and Regulations of an intended Baltic Institution for Boring for useful Minerals.] *Sitz. nat. Ges. Dorpat*, Bd. iv. Heft 3, pp. 346–356.
Refers to Silurian, Devonian, Zechstein, Jurassic, L. Cretaceous, and Tertiary rocks, giving a section of the Rypeiki borehole (Drift and Devonian) in the Kovno~~govt.~~ Govt. W. H. D.

——. Das Bohrloch von Purmallen bei Memel im Lichte der geognostischen Kenntniss seiner Umgebung. [Boring at Purmallen.] *Sitz. nat. Ges. Dorpat*, Bd. iv. Heft 3, pp. 559–572.
Passes through Peat, Drift, Tertiary, Dogger, Trias, Zechstein, and Devonian. Other sections quoted for comparison.

Gümbel, Prof. C. W. Kurze Anleitung zu geologischen Beobachtungen in den Alpen. [Geological Observations on the Alps.] Pp. 25–192 of the 'Anleitung zu wissenschaftlichen Beobachtungen auf Alpenreisen,' issued by the *Deutsche und Oesterreichische Alpenverein*. 8vo. *Leipzig*. Many illustrations in text.
General Part to p. 83. Special Part (as regards the Alps), pp. 83–190. Describes the various formations, beginning with the oldest.

Guillemin, P., and A. Salvador. Explorations dans les Alpes Briançonnaises. [Explorations in the Alps of Briançon.] *Ann. Club alp. Franç.* ann. 4, p. 193.
To some extent geological.

Guillemin, P., and **A. Salvador.** Aiguille Bleue, col del Porco, Le Traversette. [Alpine Excursions.] *Ann. Club alp. Franç.* ann. 4, p. 582.

Comprises geological notes.

——, ——. Ascension de la Pointe Peygu; Col de la Roya. [Ascent of Pointe-Peygu; Col de la Roya.] *Ann. Club alp. Franç.* ann. 4, p. 589.

Note facts of geological interest.

Gumælius, O. Berättelse öfver arbetena i Norra delen af Kalmar län 1876. [Geological Researches in the N. Part of Kalmar Government, Sweden.] *Kalmar hushålln. Handl.* Jahrg. 1877, pp. 56–62, plate (geol. map).

Notice of the distribution and petrography of the rocks (granite, pegmatite, diorite, diorite-schist, gneiss, Hälleflinta, iron- and copper-ore). E. E.

Guyot, P. Sur deux gisements de chaux phosphatée, dans les Vosges. [Two Deposits of Phosphate of Lime in the Vosges.] *Compt. Rend.* t. lxxxvii. pp. 333, 334.

In the Canton of Lamarche. Analyses show up to 79·5 p. c. of phosphates of lime and of iron.

Habenicht, H. Europa während der beiden Eiszeiten. [Two Glacial Eras of Europe.] *Mitth. geogr. Anst.* Bd. xxiv. no. 3, map.

The map shows the extent of glaciation in the first and second glacial eras.

Hallez, P. Coupe de la petite colline de l'Empenpont. [Section at the Hill of Empenpont.] *Ann. Soc. Géol. Nord*, t. v. pp. 80–83, woodcut.

Describes the section as seen in two quarries, and compares it with a cutting near Gruson.

Hantken, Miksa. A magyar korona országainak szentelepei es szenbányászata. Die Kohlenflötze und der Kohlenbergbau in den Ländern der ungarischen Krone. [Coal Beds and Coal Mines in the Hungarian Monarchy.] Pp. 331, 4 maps, 68 pls. 8vo. *Budapest.* (Magyar and German editions.)

Hauer, Fr. Ritter von. Jahresbericht des Directors . . . [Yearly Report of the Director of the Austro-Hungarian Geological Institute.] *Verh. k.-k. geol. Reichs.* pp. 1–27.

An account of the work done by the Staff of the Institute during the previous year, concluding with special reports by **M. von Hantken**, **J. von Matyasovszki**, **Dr. Karl Hoffmann**, **J. Stürzenbaum**, **B. von Inkey**, **L. Roth von Telegd**, and **J. Boeckh**, on palæontological, stratigraphical, and petrological results obtained during 1877. G. A. L.

Hauer, Fr. Ritter von. Die Geologie und ihre Anwendung auf die Kenntniss der Bodenbeschaffenheit der osterreichisch-ungarischen Monarchie. [Geology with reference to Austro-Hungary.] Ed. 2. 8vo. *Vienna.*

See notice of Ed. 1 in the GEOLOGICAL RECORD for 1875, p. 70.

Hébert, Prof. Ed. Sur la Craie supérieure des Pyrénées. Réponse à M. Leymerie. [U. Chalk of the Pyrenees. Reply to M. Leymerie.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 638–645.

Maintains all the views published in his table, *Bull. Soc. Géol. France*, sér. 3, t. iii. p. 595, GEOLOGICAL RECORD for 1876, p. 72. See **Leymerie**, *post*, p. 85.

——. Observations sur le terrain quaternaire. [Quaternary Beds.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 742–745.

Vanden Broeck is mistaken in supposing the Red Drift (*Diluvium rouge*) of France to be altered Grey Drift.

——. Sur la base du Grès bigarré. [Base of the Bunter.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 768, 769.

Calls attention to the fact that from the Vosges to the Alps and to Toulon, from Toulon to the W. end of the Pyrenees, touching the S. edge of the Central Plateau of France, the base of the Bunter takes the form of a littoral layer of pebbles of great constancy of character. At Vallauris on the Antibes road the case is different; the L. Triassic sea there beat against scarped cliffs of gneiss, and there was no beach for the production of pebbles. G. A. L.

——. Quelques remarques sur les gisements de la *Terebratula janitor*. [*T. janitor* Beds.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 108–110.

There is a growing uncertainty as to the occurrence of *T. janitor* in Jurassic deposits, and an increasing amount of evidence of its presence in Neocomian beds. In future he will refer to the beds formerly characterized by means of *T. janitor* as the *Ammonites transitorius* Beds. G. A. L.

——. Observations sur le mémoire de M. Leymerie intitulé "Observations sur le type Garumnien. [Reply to M. Leymerie's Memoir on the Typical Garumnian (see p. 85).] *Ann. Sci. Géol.* t. ix. no. 1, pp. 2.

Thinks the Garumnian newer than the Turonian, but is not certain as to its exact place.

——. Présence du *Belemnites ultimus* dans l'Yonne. [Occurrence of *Belemnites ultimus* in Yonne.] *Bull. Soc. Sci. Hist. Nat. Yonne*, sér. 2, t. xii. p. xl.

——. Sur les terrains tertiaires de la Hongrie et du Vicentin. [Tertiary of Hungary and the Vicentin.] *Bull. Soc. Sci. Hist. Nat. Yonne*, sér. 2, t. xii. p. xli.

Hébert, Prof. E., and — Munier-Chalmas. Nouvelles recherches sur les terrains tertiaires du Vicentin. [Vicentine Tertiaries.] *Compt. Rend.* t. lxxxvi. pp. 1310–1314, 1486–1489. Translated into Italian in *Boll. R. Com. geol. Ital.* vol. ix. pp. 187–195.

i. Division between the Chalk and the Tertiaries. ii. Limestone with *Nummulites Bolcensis*, &c. iii. Beds with *Alveolina*, Mt. Vallego and Mt. Postale. iv. Echinoderm Limestone of Brusa-Ferri and Lignites of Mt. Pulli. W. W.

Hecht, Dr. [Account of a visit to the Salt Mines of Wieliczka.] *Bull. Soc. Sci. Nancy*, sér. ii. t. iv. fasc. viii. pp. 23, 24.

Heim, Prof. A. Untersuchungen über den Mechanismus der Gebirgsbildung im Anschluss an die geologische Monographie der Tödi-Windgällen-Gruppe. [Mechanism of the Formation of Mountains, with special reference to the Tödi-Windgällen Group.] 2 vols. pp. 350 and 250; folio Atlas of 17 Plates. 4to. *Basle.*

Vol. i. is an account of the geology of the special region selected. Vol. ii. is on the general subject of mountain formation. Believes that the valleys of the Alps are due to erosion, that the eruptive rocks of the Alps are much older than the elevation of the chain, which was due to lateral pressure and crumpling. Calculates that a contraction of $\frac{1}{160}$ of the earth's circumference would have sufficed to fold the crust in such a way as to form all the mountains on the meridian of the Alps. G. A. L.

——. Erläuterung zu den Abbildungen Düssistock, Brigelserhörner und Tödi vom Sandalppass. [Structure of the Düssistock, &c.] *Jahrb. schweiz. Alpenclub*, Bd. xiii. pp. 569–573.

——. [Gipfelgesteine.] *Jahrb. schweiz. Alpenclub*, Bd. xiii. pp. 573–575.

——. Notice sur la formation des vallées dans les Alpes et sur les mensurations à l'embouchure de la Reuss. [Formation of Alpine Valleys.] *Écho des Alpes*, p. 232.

Notes on the terraces and torrential cone of the Reuss.

——. Ueber die Thalstufen und Terrassen in den Alpenthälern. [Terraces in the Alpine Valleys.] *Vierteljahrsschr. nat. Ges. Zürich*, Bd. xxiii. p. 277.

Describes the deposits, sketching the history of the valleys.

Hennig, Prof. C. Beiträge zur Geologie von der Nordseeinsel Borkum nebst Bemerkungen über deren Flora und Fauna. [Geology of the Is. Borkum.] *Sitz. nat. Ges. Leipzig*, Jahrg. 5, pp. 26–30.

Herbich, Dr. Ferencz. A Székelyföld földtani ès öslénytani leirasa. *Jahrb. kön. ung. geol. Anst.* Bd. iv. no. 2, and Das Szeklerland mit Berücksichtigung der angrenzenden Landestheile, geologisch und paläontologisch beschrieben. [Geology and Palæontology of the Szeklerland, Transylvania.] *Mitth. Jahrb. kön. ung. geol. Anst.* Bd. v. no. 2, pp. 19–366; 32 pls. (fossils) and map (38 divisions).

Orography, pp. 1–38. Hydrography, pp. 38–46. Stratigraphy, petrology, and palæontology, pp. 47–363. Massive igneous rocks, gneiss, slate and crystalline limestone, Silurian, Devonian, Carboniferous, Dyas, Trias (with eruptive rocks), Rhætic, Lias, Dogger, Tithonian, Neocomian, Cretaceous, Eocene, Sarmatian, and Pontian (with eruptive rocks, coal, rock-salt, &c.), Diluvium and Alluvium are described with analyses, some quoted, some new (?), by **A. Fellner, B. Lengyel, G. Tschermak, G. vom Rath, C. von Hauer, K. John,** and **Dr. Fleischer,** and lists of fossils with critical remarks on some of the Cephalopoda &c., and descriptions of the following new species:—

LIAS.

Ægoceras Althii, Æ. Alutæ, Æ. tenuicostatum, Æ. Albense.

Phylloceras Personense, P. Bielzii, P. Urmösense, P. Rákosense, P. aulonotum, P. sylvestre.

TITHONIAN.

Phylloceras leptoptychum, P. Békasensc.

Oppelia Kochi, O. Mikói, O. Hantkeni.

Perisphinctes siculicus, P. Tantalus, P. oxypleurus, P. stenonotus, P. hetærus.

Aspidoceras Bálthori, A Deáki, A. Verestoicum.

W. H. D.

Herbich, Dr. F. Geologische Beobachtungen in dem Gebiete der Kalkklippen am Ostrande des siebenbürgischen Erzgebirges. [Geology of the Limestone District on the E. side of the Transylvanian Erzgebirge.] *Budapest.*

Hermite, H. Observations géologiques sur les îles Majorque et Minorque. [Geology of Majorca and Minorca.] *Compt. Rend.* t. lxxxvii. pp. 1097–1099.

Devonian, Trias, Jurassic, Neocomian, Eocene, and Miocene rocks noticed.

Hilber, Dr. V. Die Miocän-Ablagerungen um das Schiefergebirge zwischen den Flüssen Kainach und Sulm in Steiermark. [Miocene Deposits near the Slate Rocks between the Kainach and Sulm Rivers in Styria.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 505–580, pl. xv. (geol. map).

A. Primitive Mountains, pp. 506–509. B. Marine Tertiaries (Lower Sand; St. Florian Marl, with accounts of borings and lists of fossils; Marl of Pöls, with lists of fossils; Upper Sand; Leitha Limestone, with lists of fossils); table of fossils, showing their geological range, pp. 509–575. C. Older Alluvium. D. Basalt of Weitendorf. W. W.

——. (Beiträge zur Kenntniss der Tertiär-Ablagerungen der Steiermark.) ii. Die zweite Mediterranstufe bei Hartberg in Oststeiermark. iii. Hernalser Tegel bei St. Georgan, Wildon O. [Tertiary Deposits of Styria. 2. The second Mediterranean Stage near Hartberg in E. Styria. 3. Hernals Clay near St. George.] *Verh. k.-k. geol. Reichs.* pp. 53, 54, 101.

Notes the discovery of shells belonging to the Gamlitz fauna between Grafendorf and Seibersdorf, N. of Hartberg. Notes the discovery of clay with *Modiola marginata* (Sarmatian), where hitherto the Leithakalk only has been seen, capped immediately by Belvedere Beds. (See **Fleischhacker**, p. 67.) G. A. L.

Hilber, Dr. V. Gletscherspuren zwischen Sulm und Drau in Steiermark. [Traces of Glaciers between Sulm and Drau in Styria.] *Verh. k.-k. geol. Reichs.* pp. 364, 365.
Note of occurrence.

——. Der Fundort "Mühlbauer" im Florianer Tegel. [The "Mühlbau" locality for fossils in the Florian Marl.] *Verh. k.-k. geol. Reichs.* pp. 385, 386.
Gives list of fossils found, with the position of the collecting place.

Hochstetter, Prof. Ferd. von. Ueber einen neuen geologischen Aufschluss im Gebiete der Carlsbader Thermen. [New Geological Exploration in the Region of the Carlsbad Springs.] *Verh. k.-k. geol. Reichs.* pp. 146–148. Denkschr. K. Ak. Wiss. Wien, Bd xxxix. p. 1. 3 Pls.
The Carlsbad thermal springs lie along two parallel rock-fissures. The demolition of some buildings, by exposing a fissure filled with heated aragonite and hornstone, has proved that the author's views as to the origin of the chief hot springs, published in 1852, are correct. G. A. L.

Hock, G. [*Gryphæus.*] *Ann. Soc. Géol. Belg.* t. v. pp. cxi, cxii.
A trilobite from near Huigeon. The calcareous nodules, accompanied by calc-schists, in which it was found, contain the fossils of the Rhisnes limestone. **M. Dewalque** thinks it probably a new species. W. W.

——. Sur l'Horizon du Poudingue houiller dans le nord-est de la province de Namur. [Position of the Coal Measure Conglomerate of N.E. Namur.] *Ann. Soc. Géol. Belg.* t. v. pp. 111–126, pl. 3 (sections).
The conglomerate noticed by **Firket** elsewhere (see p. 66) occurs also in this part of the basin, and, near Andenne, is about 150 mètres above the Carboniferous Limestone, at Stud and Groyne 160–170. Various stratigraphical details of the Coal Measures are given. W. W.

Höfer, Prof. H. Studien aus Kärnten.—IV. Die Felsentöpfe (Riesenkessel) bei Pörtschach. [Giants' Cauldrons near Pörtschach, Carinthia.] *N. Jahrb.* Heft 1, pp. 1–21, map and sections.
A hole near the Woerther See in Carinthia has long been known as the *Hexenkessel.* The writer has discovered several smaller cauldrons in the neighbourhood. These are described, and the various views as to their origin discussed. Concludes that they have been formed by streams running from beneath old glaciers and receiving a rotatory motion through obstacles in their course. F. W. R.

Hoernes, R. Beiträge zur Kenntniss der Tertiär-Ablagerungen in den Südalpen. [Tertiary Deposits of the S. Alps.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 9–36; 4 figs. in text.

Describes the Schio Beds (Oligocene, L. Aquitanian) in the Belluno Basin and in the country round Serravalle. Describes (1) the fauna of the green sandstone of Belluno, (2) that of the grey fish-scale-bearing and strongly bituminous marls, (3) that of the Schio beds near Serravalle. Among the first a new *Cardita*, among the second a new *Turritella* and a new *Pecten*, among the third new species of *Pinna* and *Pecten* are described, but not named. Lists of fossils from the Schio beds of the Vicentin, from the Monte Titano beds, and from the Inferior Limestone of Malta are given for comparison. Sketch sections, showing the relations of the beds in some detail, are given. G. A. L.

Hoernes, R. Ein Beitrag zur Kenntniss der sarmatischen Ablagerungen von Wiesen im Oedenburger Comitat. [Sarmatian Deposits of Wiesen, in Oedenburg County.] *Verh. k.-k. geol. Reichs.* pp. 98–101.

Notes on the more remarkable forms characterizing the local development of the Sarmatian. In some places the beds have a deceptive aspect, which renders them similar to the Belvedere Beds. G. A. L.

——. Vorkommen des *Anthracotherium magnum* in der Kohle des Schylthales in Siebenbürgen. [Occurrence of *A. magnum* in the Coal of the Schylthal, in Transylvania.] *Verh. k.-k. geol. Reichs.* p. 146.

Note of occurrence in brown coal.

Hollande, Prof. Géologie de la Corse. [Geology of Corsica.] Pp. 116; 5 pls. 8vo. *Paris.* *Ann. Sci. Géol.* t. ix. pp. 116, pls. 8–12 (sections and maps).

i. Account of previous publications. ii. Orography. iii. Description of the Basin of Galesia, Girolata, and Osani. iv. First Sedimentary Beds of the E. Coast. v. Beds of the Serra di Pigno. v. *a.* Eruptive rocks (Granite and later rocks, rocks that have crossed sedimentary beds). vi. Infralias and Lias. vii. Nummulitic Beds, M. Eocene. viii. Miocene. ix. Pliocene. x. Later Deposits. xi. Chief metalliferous deposits. xii. Conclusions, with a table of the Sedimentary beds. Pp. 115, 116 give Remarks on the Eruptive Rocks by **Prof. Fouqué.** W. W.

Ischer, Rev. G. Blicke in den Bau der westlichen Alpen. [Structure of the W. Alps.] *Jahrb. schweiz. Alpenclub*, Bd. xiii., plates.

Details of the W. Bernese Alpine geology. Crystalline rocks, Anthracite series, Trias, Lias, Jurassic, and Flysch.

Issel, A. Zeolite ed Aragonite, raccolte nei filoni cupriferi della Liguria. [Zeolite and Aragonite from Copper-veins in Liguria.] *Bol. R. Com. geol. Ital.* vol. ii. pp. 116–122.

Describes the conditions under which these minerals were found, and gives their characters.

Issel, A. Nuove ricerche sulle Caverne ossifere della Liguria. [Bone-caves of Liguria.] *Atti R. Ac. Linc.* ser. 3, *Trans.* vol. ii. pp. 30, 70, *Mem.* pp. 51–116; 5 pls.

Notes the structure and contents of 5 caves containing human bones, works of art, shells, &c.

——. Appunti Paleontologici.—III. Ritrovamento del genere *Machærodus* sugli Apennini liguri. [Discovery of *Machærodus* in Liguria.] *Ann. Mus. Nat. Genova*, vol. xii.

Jaccard, A. Notes sur les cartes géologiques, hydrographiques, etc. du Jura, destinées à l'Exposition universelle de 1878. [On Geological and other Maps of the Jura.] *Bull. Soc. Sci. Nat. Neuchâtel,* t. xi. cah. 2, pp. 220–231.

Remarks on divisions adopted, necessary omissions, &c., in 3 geological and 2 hydrographical maps.

Jentzsch, Dr. Bemerkungen über Diluvialfauna. [Diluvial Fauna.] *N. Jahrb.* Heft iv. pp. 388–391.

Discusses the significance of the *Paludina* and other freshwater shells from the N. German Drifts. The *Buccinum undatum* described some time ago is no proof of a marine origin, as its authenticity is doubtful. F. W. R.

——. Die geognostisch Durchforschung der Provinz Preussen im Jahre 1877, mit eingehender Berücksichtigung des gesammten norddeutschen Flachlandes. [Geological Progress in Prussia in 1877.] *Schrift. phys.-ökon. Ges. Königsberg,* Jahrg. 18, Abh. p. 185. 185.

Johnson, W. H. On the Resources and Future Development of the Coal Fields of Europe. *Coal & Iron Trades Gazette*, vol. iv. no. 178, pp. 237–239. [Paper read before the Manchester Geological Society.]

Jordan, S. Notes on the Resources of the Iron Manufacture in France. *Journ. Iron Steel Inst.* pp. 316–345; Discussion, pp. 346–356.

1. Coal resources of the French ironworks. Describes the Northern, Burgundian, Central, Loire, Aveyron, and Calais Coal Fields. 2. Indigenous French iron-ores. Treats of magnetic and specular ores, red hæmatites, carbonated ores, brown hæmatites, oolitic ores, granular hydrated iron-ores, and various hydrated ores. Several analyses are given. 3. On the consumption of iron-ores in France. R. B. N.

Julien, —, and Count de Saporta. Sur l'existence du terrain Permien dans le département de l'Allier. [Presence of Permian in Allier.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 546, 547.

Note of occurrence at Coulandon of a Flora of 20 species of Coal Measure facies, but comprising a few Permian.

Jumeau, —. Compte-rendu sur les excursions faites aux carrières de Brégines, près Béziers. [Excursion to the Brégines Quarries, near Béziers.] *Bull. Soc. Sci. Nat. Béziers*, ann. 2, p. 89.

Junghann, Dir. Otto. Neueren Untersuchungen über die geologischen Verhältnisse der Gräfin Lauragrube im Königshüttener Sattel in Ober-Schlesien. [Geology of the Countess Laura Mine, Silesia.] *Verh. k.-k. geol. Reichs.* pp. 377–379.

Describes a dolomitic, sandy, carbonaceous limestone, with layers of clay-ironstone and shale containing *Lingula mytiloides* and *Discina Junghanni*, Stur (new species allied to *D. nitida*). Immediately following this bed is a sandy carbonaceous shale, with many coal plants (list given) and *Anthracomya*. G. A. L.

Kalkowski, Ernest. Die Gneiss-Formation des Eulengebirges. [Gneiss of the Eulengebirge (Silesia).] Pp. 75; 8 pls. 8vo. *Leipzig.*

Two stages are distinguished in the Gneiss formation of these mountains, chiefly by means of petrological differences.

Keller, Dr. Ferdinand. The Lake Dwellings of Switzerland and other Parts of Europe, translated by **J. E. Lee.** Ed. 2: Vol. i. pp. xv, 696, frontispiece and 50 woodcuts; Vol. ii. pp. 27, 206 plates.

Of geological interest. Notes on Jadeite and Jade, by **Thomas Davies,** p. 683.

Kjerulf, Th. En model af Kongsbergsfjeld. [Model of Kongsberg Mountain, Norway.] *Naturen*, May, pp. 77, 78.

Knop, Dr. A. Ueber die hydrographischen Beziehungen zwischen der Donau und der Aachquelle im badischen Oberlande. [Hydrographic Relations between the Danube and the Aach.] *N. Jahrb.* Heft iv. pp. 350–363, plate.

Continuation, see Geological Record for 1875, p. 76. Shows by experiments (made with salt, shale-oil, and organic colouring matters) that there is a direct connexion between the Aach and the Danube, by means of a system of fissures in Jurassic limestone. F. W. R.

Koch, Dr. Antal, and **Bela Dezsö.** Jelentés az Oncsasza csontbarlang mégvizsgálásáról és összehasonlitó tanulmány az ottan gyujtött *Ursus spelæus*, Blumb., csontvázáról. [Examination of the Oncsasza Bone Cave, and Comparative Osteology of *Ursus spelæus* there found.] *Evkön. Erdél. Muz.-Egyl.* n. f. Bd. ii. Heft 4, pp. 95–144; 3 pls. (with German abstract).

Kolb, Franz. Bericht über die Ablagerung des Grund- und Plattelkohlenflötzes in Třemošna bei Pilsen. [Lie of the "Grund" and "Plattel" Coal Seams of Tremosna, near Pilsen.] *Verh. k.-k. geol. Reichs.* pp. 335–337; 2 figs. in text.

Local details of seams, illustrated by longitudinal sections. Introductory note by **D. Stur.**

Koninck, Lucien de, and — Malaise. [Minerals, &c.] *Ann. Soc. Géol. Belg.* t. v. p. cxxxviii.

Notes of occurrence of rutile, of Coal Measure conglomerate, of asbestos, and of *Davreuxite*, n. sp., at Ottré, &c.

Kosmann, Dr. Bern. Die neueren geognostischen und paläontologischen Aufschlüsse auf der Königsgrube bei Königshütte. [Geological and Palæontological Novelties of the King's Mine, near Königshütte.] *Zeitschr. Oberschles. Berg- Hütt. Ver.*, and *Verh. k.-k. geol. Reichs.* pp. 379, 380, and *Berggeist*, p. 413.

Together with plants of the Kulm series (*Archæocalamites*, &c.), *Bellerophon Urii*, *Posidonomya*, and *Modiolopsis* have been found.

Krejči, S. Ueber die Conglomerate des sogenannten Eisengebirges. [Conglomerate of the "Iron Mountain."] *Sitz. k. böhm. Ges. Wiss.*

Kuss, H. Mémoire sur les Mines et Usines d'Almaden. [Mines and Works of Almaden (Spain).] *Ann. Mines*, sér. 7, t. xiii. pp. 39–151, pl. iv. Part 1 translated by J. E. in *Bol. Com. map. geol. Españ.* t. v. pp. 329–314.

Part 1 describes the geology (Silurian and Devonian) of the district, with special reference to the quicksilver deposits, giving analyses of 4 melaphyres and a diabase. Part 2 describes the mode of working the mines. G. A. L. & W. H. D.

Kušta, J. Der Brandschiefer von Herrendorf bei Rakonitz. [Oil-shales of Herrendorf, near Rakonitz.] *Verh. k.-k. geol. Reichs.* pp. 354–358.

Gives an account of the published papers relating to the "Carboniferous Island" of Herrendorf, in the Schlan-Rakonitz basin. A measured section of the beds follows. The bituminous shales contain fish-remains. A list of the fossil plants of the Herrendorf beds is appended. G. A. L.

——. Zur Kenntniss der Steinkohlen-Flora des Rakonitzer Beckens. [Coal Flora of the Rakonitz Basin.] *Verh. k.-k. geol. Reichs.* pp. 380–385.

Gives references to works on the subject by former authors, and lists of plants from various localities.

Lacvivier, — de. Note sur un *Micraster* nouveau (*M. Heberti*). [New *Micraster* (*M. Heberti*).] *Bull. Soc. Géol. France,* sér. 3, t. v. pp. 537–540, pl. viii., fig. in text.

Gives a detailed section (figured) of the Cretaceous (Hippuritic) beds in which the new form was found at Bastié, near Foix, in Ariége. The new species is described and figured. G. A. L.

Lambert, G. Notice sur la découverte d'un nouveau bassin houiller dans le Limbourg hollandais. [New Coal Basin in Dutch Limburg.] *Bull. Soc. Industr. min. St. Etienne*, sér. 2, t. vii. p. 303. [See Geological Record for 1876, p. 84.]

Laporte, Henry. A Geological Sketch of the Northern Coal-field of France. *Trans. N. Engl. Inst. Eng.* vol. xxvii. pp. 143-162, pls. xviii.-xxi. (maps and sections).

Notices the beds above and below the Coal Measures, and the earth-movements of the region. Describes the Boulonnais Coal-field, in which there are six bands of coal-measures. Gives a descriptive List of the Companies of the Northern Coal-field. W. W.

Lapparent, Prof. Alb. de. Note sur le bassin silurien de Mortain. [Silurian of Mortain.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 569-578; 3 figs.

The rocks occurring at Mortain are the following:—Upper Grit = "Grès de May;" Trilobite Schists = "*Calymene Tristani* Slates;" Bed of Iron-ore; Quartzite. The last rests unconformably upon upturned andalusite- and staurolite-schists and on granite. 3 sketch sections are given. G. A. L.

——. Sur le Granite du Mont Saint-Michel et sur l'âge du Granite de Vire. [Granite of Mt. St. Michel, and Age of that of Vire.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 143-147.

These granites have nothing in common. The former is a stratiform white-mica or tin granite, always contains tourmaline, and its quartz is granulitic; it is later than and cuts through the Granite of Vire. The eruption of the latter took place between the Cambrian and L. Silurian. G. A. L.

Lasala, M. R. Datos geologico-industriales de la provincia de Santander. [Geology of the Province of Santander.] *Bol. Com. map. geol. Españ.* t. v. pp. 167-175.

Describes aphanite, kaolin, and Triassic rocks.

Laube, Prof. Dr. G. C. Notiz über das Alter der auf den Abhängen des Teplitzer Schlossberges zerstreut liegenden Quarzitblöcke. [Age of the Quartzite Blocks on the Flanks of the Castle Hill at Teplitz.] *Verh. k.-k. geol. Reichs.* pp. 208, 209.

Considers the blocks to belong to the Brown Coal Sandstone of the region.

Lebour, Prof. G. A. The Monte Generoso Beds. *Geol. Mag.* dec. ii. vol. v. pp. 422, 423.

Gives a table correlating the beds in question with British divisions, from Neocomian to Keuper.

Lechleitner, Ch. Ueber den rothen Sandstein an der Grenze der Central- und nord-tirolischen Kalkalpen. [The Red Sandstone on the Borders of the Central and N. Tyrolese Limestone Mountains.] 20. *Programm des k.-k. Staatsgymnasiums zu Innsbrück.*

Leclercq, E. Coupes de la Craie aux environs de Quesnoy. [Sections in the Chalk near Quesnoy.] *Ann. Soc. Géol. Nord,* t. v. pp. 170–172.

Sections in four different quarries are given.

Lehmann, J., and H. Mietzsch. Section Glauchau. Blatt 94. [Explanation of the Glauchau Sheet (94) of the Geological Survey of Saxony.] *Erläut. geol. Specialkarte Sachs.* Pp. 46. 8vo. *Leipzig.* Price 1*s.*

Describes Archæan granulite, gneiss, mica-schist, and clay-slate, Dyas, L. Oligocene, Diluvium, and Alluvium. The M. Rothliegende consists of tuffs, porphyritic rocks, &c. W. H. D.

Lennier, —. La géologie normande.—L'embouchure de la Seine. [Normandy Geology.—Estuary of the Seine.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 38–43.

Sketch of the geological formations in Normandy.

——. Géologie normande. [Geology of Normandy.] *Compt. Rend. Assoc. Franç.* sess. 6, p. 458.

Calls attention to the littoral deposits of the Channel lying several metres above the present sea-level, and accounts for them, not by upheaval of the land, but the presumably much higher tides which must have obtained when England and France were united by an isthmus. G. A. L.

Lenz, Dr. O. Vorlage der geologischen Karten des Stanislauer Kreises in Ostgalizien. [Announcement of the Geological Map of Stanislaus, E. Galicia.] *Verh. k.-k. geol. Reichs.* p. 108.

——. Reiseberichte aus Ostgalizien. ii. [Notes of Travel in E. Galicia. No. ii.] *Verh. k.-k. geol. Reichs.* pp. 324–326.

A number of brief geological notes.

——. Gypstegel und Süsswasserkalkstein in Ostgalizien. [Gypseous Marl and Freshwater Limstone in E. Galicia.] *Verh. k.-k. geol. Reichs.* pp. 337, 338.

Lepan, R. Coupe relevée dans la tranchée de la rigole de desséchement derrière la Citadelle de Lille. [Section in the Trench behind the Citadel at Lille.] *Ann. Soc. Géol. Nord,* t. v. pp. 167, 168.

The beds are alluvial clays and sands, with freshwater shells.

Lepsius, Dr. Richard. Das westliche Süd-Tirol geologisch dargestellt. [Geology of W. South Tyrol.] Pp. x, 375, pls. i.–vii. (fossils), viii.–x. (folding sections), folding map in pocket, scale 1:14400. 4to. *Berlin.*

Topography of the 7 ranges in the district, pp. 9–27. Description (pp. 28–190) of the lithological characters of the Metamorphic, Permian, Trias, Rhætic, Lias, L. and U. Jurassic, L. and U. Cretaceous, Eocene, Miocene, Diluvial, and Eruptive (Archæan and Triassic) rocks. Range of these in the topographical divisions, pp. 181–339. Deundation, pp. 339–347. Palæontology, pp. 348–369, describing, besides known species, the following new ones :—

Avicula angulosa.	Trias.	Gervillia ? mirabilis.	Lias.
Gervillia exporrecta.		—— volanensis.	
—— incurvata.		—— lamellosa.	
Natica semicostata.		Avicula spinicosta.	
Myophoria picta.		Patella costata.	
		—— conoidea.	
Ophiura Doræ.	Rhætic.		
Cyrena rhætica.		Terebratula Lossii.	Lower Jurassic.
Turbo Lorinæ.		Rhynchonella Clesiana.	
—— fallax.		—— Vigilii.	
Modiola rhætica.			
—— gracilior.		Raia, sp.	Miocene.
Spirifer orthiformis.			

W. H. D.

Letellier, —. Notice sur le Musée d'histoire naturelle de la ville d'Alençon. [Account of the Natural History Museum of Alençon.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 547–561.

Synopsis of the contents of the Museum, especially as regards the geology of the Department (Orne).

——. Note géologique sur les terrains traversés par le chemin de fer d'Alençon à Domfront. [Geology of the Railway between Alençon and Domfront.] *Bull. Soc. Linn. Norm.* ser. 3, t. ii. p. 340.

Leymerie, Prof. A. Observations sur: 1° une note de M. Alph. Favre relative à la diminution de la hauteur absolue des Alpes; 2° une note de M. Coquand sur les marbres des Pyrénées; et 3° la classification proposée par M. Hébert pour les terrains crétacés supérieurs des Pyrénées. [Remarks on: 1. A Note by A. Favre on the Decrease in the absolute Height of the Alps; 2. A Note by Coquand on the Pyrenean Marbles; and 3. The Classification of the U. Cretaceous of the Pyrenees proposed by Hébert.] *Bull. Soc. Géol. France,* sér. 3, t. v. pp. 632–638.

1. A mere correction. 2. Disputes the Carboniferous age of the saccharoidal Marbles of St. Béat. 3. Criticises Hébert's views as to the equivalence of the various members of the Cretaceous of the Pyrenees, especially complaining of the non-recognition of the Garumnian series as such (see **Hébert**, p. 75). G. A. L.

——. Mémoire sur le Type Garumnien comprenant une Description de la Montagne d'Ausseing, un Aperçu des principaux Gites du Département de la Haute-Garonne et une Notice sur la Faune d'Auzas. [The Garumnian. Description of Mt. d'Ausseing. Chief Beds of Haute-Garonne. Fauna of Auzas.] *Ann. Sci. Géol.* t. ix. 54 pp., pls. 1–3 (sections and fossils). See also **Cotteau,** *post,* under INVERTEBRATA.

Describes the Lesser Pyrenees. Under the heading Mt. d'Ausseing

Senonian, Garumnian, and Eocene beds are described, and the discordance between the hill and the plain. The district of Salies and Marsoulas is described, and then the W. part of the Lesser Pyrenees (St. Martory Auzas, Le Tuco, Séglan, St. Marcet, Latoue, Val de Bonnefonds, and Aurignac). A résumé of the characters of the marine Garumnian is given, and the extension of the type (lacustrine facies) in Languedoc and Provence. The Catalan Garumnian is noticed, and Hébert's classification of the U. Cretaceous beds criticised. The Garumnian fossils of Auzas are described and figured, the new species being—*Actæonella Baylei*, *Dejanira Heberti*, and *Radiolites Leymeriei*, Bayle. W. W.

Leymerie, Prof. A. Sur la Craie des Pyrénées centrales. [Pyrenean Chalk.] *Compt. Rend.* t. lxxxvi. pp. 1362, 1363. [Abstract of work to be printed in full.]

Liebe, K. Th. Section Langenberg. Gradabtheilung 71, No. 5. [Explanation of the Langenberg Sheet of the Geological Map of Prussia.] Pp. 21. 8vo. *Berlin.*

Describes Coal Measures, Permian, Bunter, Oligocene, Diluvium, and Alluvium.

——. Section Grossenstein. Gradabth. 71, No. 6. [Ditto Grossenstein Sheet.] Pp. 12. 8vo. *Berlin.*

L. Silurian, Devonian, Carboniferous, Permian, Bunter, Oligocene, Diluvium, and Alluvium are noted.

——. Section Gera. Gradabth. 71, No. 11. [Ditto Gera Sheet.] Pp. 29. 8vo. *Berlin.*

Describes Silurian, Devonian, Carboniferous, Permian, Bunter, Oligocene, Diluvium, and Alluvium.

——. Section Ronneburg. Gradabth. 71, No. 12. [Ditto Ronneburg Sheet.] Pp. 29. 8vo. *Berlin.*

As above, with addition of Cambrian and Igneous Rocks.

Lindström, A. Berättelse om en agronomisk-geologisk undersökning af en del af Norra Tjust Närad af Kalmar län 1876. [Agronomic Geological Researches on Part of North Tjust, Kalmar Government, Sweden.] *Kalmar hushålln. Handl.* Jahrg. 1877. Pp. 38–55.

Notes on the occurrence of the economically valuable rocks, as gneiss, granite (building and ornamental stones), quartzite (glass making) glacial clay and marl, alluvial clay, shell-beds, freshwater loam with shells (bricks, agricultural purposes, etc.), peat, etc. 16 analyses of peat and different varieties of clay given. E. E.

——. Beskrifning till kartbladet Herrevadskloster. No. 67. [Description of the Herrevadskloster Sheet.] *Sver. Geol. Undersökn.* pp. 38.

Account of the crystalline rocks and Quaternary deposits, with economic notes. Gives analyses of glacial marl, boulder clay, and peat.

Lindvall, G. A. Försök till förklaring öfver tillkomsten af våra Rullstensåsar, refflorna i bergen m. m. [Origin of "åsar," the Striæ on Rock Surfaces, etc.] Pp. 15; 2 plates. 8vo. *Stockholm.*
Thinks that the tide-water has been the greatest cause of the accumulation of our Quaternary deposits and of the glacial phenomena, viz. striation, giants' kettles, etc. The plates contain sketch-maps showing the N. part of Europe at different levels of the ocean. E. E.

Linnarsson, G. Professor Milne and the Glacial Phenomena of Scandinavia. *Geol. Mag.* n. s. dec. ii. vol. v. pp. 93–96.
Protest against the statements of Prof. Milne (*Geol. Mag.* 1877, pp. 289, etc.) attributing the features of Sweden and Finland (regarded by Scandinavian geologists as due to the action of glaciers, or a continental ice-sheet) to coast-ice. G. A. L.

——. De palæozoiska bildningarne vid Humlenäs i Småland. Palæozoic Deposits at Humlenäs in Småland, Sweden.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 177–184, plate (map).
Notes on red and grey *Orthoceras* limestone with fossils (list given), bituminous limestone with *Agnostus pisiformis,* sandstone with *Scolithus,* and granite-breccia. E. E.

Lobe, —. Vorkommen von Anthracomyen bei Slawkow in Russisch-Polen. [Occurrence of *Anthracomya* near Slawkow, in Russian Poland.] *Verh. k.-k. geol. Reichs.* p. 380.
Occurs with *Streptorhynchus crenistria.*

Lóczy, L. von. Die Liszkovaer Höhle im Baráthegy (Liptauer Comitat). Eine vorgeschichtliche Höhlenwohnung und deren Ueberreste. [The Liszkova Cave in Liptau County.] Pp. 55; 19 woodcuts. 8vo. *Budapest.* Translation from *Természet. Közl.* 1877.
Describes briefly the geology of the district (Trias, Cretaceous, and Eocene), the cave, and the human remains, &c. found in it.

Löfstrand, G. Iakttagelser rörande åsgropen Tärnsjön i Nora socken, Vesterås län. [Kettle-like Cavity in the Surface of an "Ås," Sweden.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 201, 202.

Loriol, P. de. Notice sur le *Pentacrinus* de Sennecy-le-Grand avec un travail sur la couche calcaire qui le contient par **M. Delafond** et un préambule par **M. F. Chabas.** [The *Pentacrinus* of Sennecy, with a Memoir on the Limestone containing it.] Pp. 14; 2 pls. 4to. *Châlon-sur-Saône.*

Lory, Ch. Caractères différentiels du Permien et du Trias dans les Alpes et dans d'autres régions. [Distinctive Characters of the

Permian and Trias in the Alps and elsewhere.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 761, 762.

Considers the felspathic porphyritic character of the red beds of L'Estérel as especially Permian, and like that which obtains in the most typical rocks of that age in Germany. Dwells upon the great and abnormal thickness of the Trias in the Alps, and on its two facies on either side of the line of crystalline rocks extending from the Bernese to the Maritime Alps, by Mont Blanc and L'Oisans. G. A. L.

Lory, Ch. Les coupures transversales des Alpes et les principaux passages de France en Italie au point de vue de l'orographie géologique. [The Transverse Gorges of the Alps and the chief Passes between France and Italy from an orographical and geological standpoint.] *Ann. Club alp. Franç.* ann. 4, p. 350.

——. Examen des causes assignées par M. de Candolle à l'inégale distribution des plantes rares dans les Alpes. [Examination of the Causes assigned by de Candolle for the unequal Distribution of rare Plants in the Alps.] *Bull. Soc. Sci. Nat. Isère*, sér. 3, t. vii. p. 322.

The causes mentioned are geological.

——. Epoques de dislocations géologiques dans les Alpes occidentales. [Periods of Geological Dislocations in the W. Alps.] *Bull. Soc. Sci. Nat. Isère*, sér 3, t. vii. p. 326.

——. Essai sur l'orographie des Alpes occidentales considérée dans ses rapports avec la structure géologique de ces montagnes. [Relation of the Orography and Geology of the W. Alps.] *Bull. Soc. Sci. Nat. Isère*, sér. 3, t. vii. pp. 330, 437.

Describes 5 orographic zones, separated by faults. The highest zone is chiefly crystalline rocks in fan structure, holding in its folds anthracitic sandstone, Trias, Rhætic, Lias, and Jurassic rocks. The 2nd zone is chiefly Trias, the 3rd chiefly anthracitic, the 4th crystalline and Triassic, and the outer, sub-Alpine zone, consists of the complete Secondary series with Nummulitic rocks and Molasse. W. H. D.

——. Sur un échantillon des Aiguilles d'Arve ramassé au Sappey. [Specimen from the Aiguilles d'Arve picked up at Sappey.] *Bull. Soc. Sci. Nat. Isère*, sér. 3, t. vii. p. 418.

——. Profils géologiques de quelques massifs primitifs des Alpes. *Compt. Rend.* t. lxxxvi. pp. 996–999.

Lotti, B. Una sezione geologica attraverso il Monte di Murlo presso Siena, a proposito dell' epoca delle serpentine dell' Italia centrale. [Section across Mt. Murlo near Sienna, with regard to the Age of the Serpentine of Central Italy.] *Bol. R. Com. geol. Ital.* vol. ix. pp. 29–33, woodcut.

The green rock near Murlo overlies a limestone series not older than U. Cretaceous; and the circumstances of its occurrence are in favour of its sedimentary origin. W. W.

Lotti, B. Il giacimento antimonifero della Selva presso Pari, le putizze e le sorgenti sulfuree di Petriolo, e il giacimento ramifero del Santo. [Antimoniferous Bed near Pari, Sulphur-spring of Petriolo, and Copper-bearing Bed of Santo.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 83–90.

Gives a section across Pari, and quotes an analysis of the water of Petriolo by **Giuli** (1834).

——. Il Monte Amiata. *Boll. R. Com. geol. Ital.* vol. ix. pp. 251–261, 363–384.

The first part is an account of previous publications. The second is under two headings:—Sedimentary rocks and their associated metalliferous beds (Pliocene, Eocene, Cretaceous); Eruptive rocks and hot mineral springs. W. W.

——. Sull' orizzonte nummulitico presso Castelnuovo dell' Abate in provincia di Siena. [Nummulitic Rocks, Tuscany.] *Atti R. Ac. Linc.* ser. 3, *Trans.* vol. ii. pp. 118–120.

Describes coarse conglomeratic limestones with nummulites, &c. underlying micaceous sandstone and other beds, over which come Pliocene and Post Pliocene deposits. W. H. D.

Lovisato, Dr. Domenico. Cenni geognostici e geologici sulla Calabria settentrionale. [Geology of N. Calabria.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 155–174, 347–363, 468–487.

Part 1. Divisions, orography and hydrography of Calabria. Parts 2 and 3. Primitive rocks of Sila.

——. Di alcune azze, scalpelli, martelli, e ciottoli dell' epocha della pietra trovati nella provincia di Catanzaro. [Axes, &c. of the Stone Age found in Catanzaro.] *Boll. Soc. Adr. Trieste*, vol. iii. no. 3.

——. Strumenti litici e brevi cenni geologici sulle provincie di Catanzaro e di Cosenza. [Stone Implements and Geological Notes on Catanzaro and Cosenza.] *Atti R. Ac. Linc.* ser. 3, *Mem.* vol. ii. pp. 770–789, plate.

Continuation of the above. List of implements, &c., with notes on the nature of their material, as bearing on their origin, local or foreign, involving remarks on local geology. Gives analysis of nephrite by **Fellenberg.** W. H. D.

——. Sopra alcune giacimenti minerali nuovi o poco conosciuti della Calabria. [New and Little-known Mineral Localities in Calabria.] *Cronaca liceale.*

Kinzigite, a common Calabrian rock, contains much garnet. The Calabrian marbles also yield garnet, spinel, and idocrase.

Lovisato, Dr. Domenico. Il monte de Tiriolo. *Cronaca liceale.* Geological and mineralogical notes on Mt. Tiriolo, Calabria.

Luca, S. de. Sul livello dell' acqua termo-minerale della Solfatara di Pozzuoli. [Level of the Thermo-Mineral Water of the Solfatara, Pozzuoli.] 4to. *Naples.*

——. Sulle variazioni di livello dell' acqua termo-minerale nel pozzo della solfatara di Pozzuoli. [Variations of the Level of the Thermo-Mineral Waters in the Well of the Pozzuoli Solfatara.] 4to. *Naples.*

Ludecke, Dr. —. [Excursion to Thuringia.] *Zeitschr. gesammt. Nat.* Folg. 3, Bd. iii. pp. 588, 589.
Touches on the geology.

Ludman, Otto. Kivonat a Vihorlet Trachythegysegnek Topographicus Leirásábol. [Topography of the Trachyte Mts. between Kivonat and Vihorlet]. *Math. Természet. Közlem.* Köt. xv. pp. 407–411.
Abstract in advance of a larger work. Touches on the geology.

Ludwig, R. Das Braunkohlenvorkommen bei Seligenstadt am Main (Section Offenbach-Hanau). [Lignite-beds at Seligenstadt.] *Notizbl. Ver. Erdk. Darmstadt.* Folg. 3, Heft 17, pp. 323–325.
Describes this Oligocene deposit.

Ludwigs, J. G. Kurze Darstellung der Bildungsweise, Merkmale und des Vorkommens der quaternären Alluvial-Gebilde in den Ostseeprovinzen Russlands. [Formation, Indication, and Occurrence of Quaternary Alluvia in the Baltic Provinces.] *Sitz. nat. Ges. Dorpat,* Bd. iv. Heft 3, pp. 428–497.
Divided into clay, marl, travertine, sand, ooze, peat, bog-iron-ore, and sand dunes.

Lundgren, B. Ueber Angelin's geologische Uebersichts-Karte von Schonen. [Angelin's Geological Map of Scania.] *N. Jahrb.* Heft 7, pp. 699–714.
A summary of the description accompanying the map. Palæozoic, Mesozoic, Cainozoic, metamorphic, plutonic, and volcanic rocks.

Machado, Ant. Breve reseña de los terrenos cuaternario y terciario de la provincia de Sevilla donde se han encontrado varios molares de Elephantes fosiles y el esqueleto de un Cetaceo. [Sketch of the Quaternary and Tertiary Rocks of Seville, with Remains of Elephant and Whale.] Pp. 19. 8vo. *Seville.*

Macpherson, J. Sobre la existencia de la Fauna Primordial en la Provincia de Sevilla. [Primordial Fauna in the Province of Seville.] *Ann. Soc. Españ. Hist. Nat.* t. vii. pp. 281–284.
Describes the discovery of *Archæocyathus,* new to Europe, in Palæozoic rocks, near Pedroso, from which their pre-Silurian age is argued.

Macpherson, J. Fenómenos dinámicos que han contribuido al relieve de la Serranía de Ronda. [Dynamic Phenomena connected with the Upheaval of the Serranía de Ronda.] *An. Soc. Españ. Hist. Nat.* t. vii. pp. 491–503.

Discusses the mode of upheaval of the mountainous country between Ronda and Gibraltar, and gives a section.

Maderspach, —. [Zsily Valley.] *N. Jahrb.* Heft ix. pp. 491, 442.

A fossiliferous limestone in the Zsilythal passes into gneiss.

Malaise, C. Sur des Lingula trouvées à Lierneux, dans le cambrien de l'Ardenne. [*Lingula* at Lierneux, in the Cambrian of the Ardennes.] *Ann. Soc. Géol. Belg.* t. v. pp. cxxxvii, cxxxviii; and under the title "Découverte de Brachiopodes du genre *Lingula* dans le cambrien du massif de Stavelot." [Discovery of *Lingula* in the Cambrian of Stavelot.] *Bull. Ac. R. Belg.* sér. 2, t. 46, p. 58.

Near to *L. primæva* of the L. Cambrian of St. David's. It was found in manganesiferous Salmian slates near Lierneux.

——. Sur une espèce minérale nouvelle pour la Belgique : l'Arsénopyrite ou Mispickel. [Mispickel, a mineral new to Belgium.] *Bull. Ac. R. Belg.* sér. 2, t. 46, pp. 881, 882.

Found in a quartz vein cutting through the Tubize or No. ii. division of the Silurian of Brabant, at Court-Saint-Etienne.

Mallada, L., and **J. Buitrago.** La Fauna primordial á uno y otro lado de la Cordillera Cantabrica. [Primordial Fauna in the Cantabrian Cordillera.] *Bol. Com. map. geol. Españ.* t. v. pp. 177–194.

Notes the Primordial, Silurian, Devonian, Carboniferous, and Cretaceous rocks.

Mantovani, Prof. Pio. Alcune osservazioni sui terreni terziari dei dintorni di Reggio Calabria. [Tertiary Beds of Reggio, in Calabria.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 443–468.

The beds described are Quaternary, Pliocene, and Miocene, the latter being a conglomerate, like the *Nagelfluh* of Switzerland.

Mantovani, Prof. P., and **G. Ponzi.** Alla Costituzione geologica del suolo romano. [Geology of Rome.] *Rome.*

Manzoni, Dr. A. Considerazione geologiche a proposito del *Pentacrinus Gastaldii* della Molassa del Montese. [Geological Considerations à propos of *Pentacrinus* in the Molasse.] *Ann. Soc. Nat. Modena*, ser. 2, ann. xii. pl.

Martin, Jules. Description du groupe bathonien dans la Côte d'Or. [Bathonian of Côte d'Or.] Pp. 100; 15 pls. 8vo. *Dijon, t.v.* —Mem. Ac. S

Martin, Prof. K. Niederländische und nordwestdeutsche Sedimentärgeschiebe, ihre Uebereinstimmung, gemeinschaftliche Herkunft und Petrefacten. [Dutch and N.W. German Sedimentary Rock Pebbles, their Similarity, common Origin, and Fossils.] Pp. 106; 3 pls. 8vo. *Leyden.*

Describes the Drift whence the pebbles are derived, and the parent rock-masses, L. and U. Silurian, Devonian, Carboniferous, Triassic, Jurassic, Cretaceous, Eocene, and Miocene in W. Russia, Germany, and Belgium. Gives a classified list of fossils in the pebbles, and describes and figures the following new species:—*Aulocopium variabile*, *Silurispongia* (n. gen.) *conus*, *Favosites Staringi*, *Monticulipora confluens*, *Halysites triangulata*, *Syringopora Groningana*, *Cœnites Swinderenanus*, *Rhizophyllum ? Groninganum.* 37 previously known species are mentioned and partly described, but not figured. W. H. D.

Massart, A. Steinkohlenbassin zu Puertollano Provinz Ciudad-Real, Spanien. [Coal-field of Puertollano, Province of Ciudad-Real, Spain.] *Berggeist*, p. 405.

Maufras, —. Note sur les dépôts quaternaires de la vallée de la Seugne. [Quaternary Deposits of the Seugne Valley.] *Mat. Hist. Homme*, sér. 2, t. ix. p. 104.

Maurer, Fr. [Rhenish Geology.] *N. Jahrb.* Heft i. pp. 48–50.

Geological observations during an excursion to the Ruppbachthal. Confirms his former observations: ascending order of rocks—Coblentz Grauwacke, *Orthoceras* slates, and *Pentamerus* schists. Notes additional fossils found. F. W. R.

Maussier, —. Carte géologique du district anthraxifère de Saint-Symphorien-de-Lay (Loire). [Geological Map of the Coal District of Symphorien-de-Lay.] *Bull. Soc. Industr. min. St. Etienne*, sér. 2, t. vii. p. 151.

Meinich, L. Om forekomsten af nickelmalm i Smålenene. I. Romsås. [Occurrence of Nickel Ore at Smålenene, Norway.] *Nyt Mag. Nat.* Bd. 24, N. 2, pp. 125–137, plate (showing the mines at Romsås).

Mercalli, —. Sulle Marmotte fossili trovate nei dintorni di Como. [Fossil Marmots, Como.] *Atti Soc. Ital. Sci. Nat.* vol. xxi.

Records occurrence in erratic gravels.

Mercey, N. de. Note sur la détermination de la position du Calcaire lacustre de Mortemer entre les Sables de Bracheux et les Lignites, et sur les sables marins de la rive droite de l'Oise compris entre les Lignites et les Sables de Cuise. [Position of the Lacustrine Limestone of Mortemer between the Bracheux Sands and the Lignites. The Marine Sands of the right bank of the Oise between the Lignites and the Cuise Sands.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 198–200.

Mercey, N. de. Note sur la formation du limon glaciaire du département de la Somme par le remaniement des sables gras ou alluvions de rive des Alluvions anciennes. [Formation of the Glacial Mud of the Somme by the Re-assortment of the Clayey Sands or Shore Alluvia of the Ancient Alluvia.] *Bull. Soc. Géol. France,* sér. 3, t. vi. pp. 201, 202.

Meugy, —, and — Nivoit. Explication de la carte géologique et agronomique de l'arrondissement de Rethel. [Explanation of the Geologico-agricultural Map of the Arrondissement of Rethel.] 8vo. *Charleville.*

Meurdra, Lt.-Col. H. Étude sur le régime des sources du Hàvre. [System of Springs of Hâvre.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 467–479.

The springs of the Plateau of Hâvre (natural springs of Ste. Adresse, Fontaines, Rouelle, and La Boutellerie, artificial springs of Bellefontaine, and others between Granville and Ste. Adresse) are off the Gault (Gaize). Beyond a line running by Gournay and Canville, the springs are off the Chalk Marl. The relations between the local rainfall and the yield of the springs is considered in detail. G. A. L.

Michel-Lévy, —. Notes sur le gisement de l'amphibolite à wernérite granulitique d'Oedegaard près Bamle (Norvége). [Position of the Amphibolite of Oedegard, Norway.] *Bull. Soc. min. France,* No. 5.

——. Sur l'existence de filons de basalte dans la région nord-est du Morvan. [Occurrence of Basaltic Dykes in N.E. Morvan.] *Bull. Soc. Géol. France,* sér. 3, t. v. pp. 562, 563; Discussion, p. 564.

Announces the discovery of a system of N.W. and S.E. fissures filled with basalt. The basalt is associated with so-called minette. The fissures were previously filled with various porphyries and with a horny quartz; and their reopening at the time of the injection of basalt took place in post-Liassic times. G. A. L.

Mieg, M. Notes sur Bagnères de Bigorre et ses environs. *Bull. Soc. Industr. Mulhouse,* t. xlviii. p. 123.

——. Aperçu des terrains visités par la Société géologique de France, dans les départements du Var et des Alpes-Maritimes, du 21 au 31 Oct. 1877. [Sketch of the Formations visited by the French Geological Society in the Var and Maritime-Alps, October 1877.] *Bull. Soc. Industr. Mulhouse,* t. xlviii. p. 330.

Milaschewitch, K. Otviete H. Prendelu. [Prendel's Memoir.] *Bull. Soc. Imp. Nat. Mosc.* t. liii. pp. 31–38.

Criticises Prendel's view of the Crimean beds being transitional between Tertiary and Cretaceous.

Mohn, H. Askeregnen den 29de–30de Marts 1875. [The Ash-rain (Ash-fall) the 29th–30th March, 1875.] *Forh. Vid.-Selsk. Christiania*, 1877, No. 10, pp. 1–12; 1 plate.

Describes an ashfall over Central Norway and Sweden. It had its source in a crater in the E. of Iceland. A sketch map shows the horizontal distribution of the ash. See **Rath**, GEOLOGICAL RECORD for 1876, p. 361. E. E.

Mojsisovics, Dr. E. von. Ueber die südtiroler Quarzporphyr-Tafel. [Quartz-porphyry Plateau of S. Tyrol.] *Verh. k.-k. geol. Reichs.* pp. 58, 59.

This district is a huge system of tuffs and lavas, the eruptive centre of which is not known.

Monreal, L. N. Datos Geológicos acerca de la Provincia de Leon, recogidos durante la campaña de 1877 á 1878. [Geology of Leon.] *Bol. Com. map. geol. Españ.* t. v. pp. 201–207.

Notes igneous, Silurian, Carboniferous, and Tertiary rocks.

——. Apuntes Físico-geológicos referentes á la Zona Central de la Provincia de Almeria. [Geology of Central Almeria.] *Bol. Com. map. geol. Españ.* t. v. pp. 209–310, pl. C (map).

Describes the orography, hydrography, and agriculture. Notes the character, range, &c. of the Quaternary, Pliocene, Miocene, Trias, Silurian, and Eruptive rocks. Describes the mode of occurrence, &c. of ores of lead, copper, and iron, lignite, cinnabar, and steatite. Antimony, gypsum, and manganese also occur. W. H. D.

Morière, Prof. J. Note sur le grès de Bagnoles (Orne). [The Bagnoles Grit (Orne).] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 225–232; and *Bull. Soc. Linn. Norm.* sér. 3, t. ii. pp. 15, pl.

The Grit belongs to the Armorican Grit series of the L. Silurian, and is the Grès à Tigillites (*Scolithus*) of French geologists. A list of fossils is given, comprising 4 species of *Lingula*, with 3 Annelids, and 10 Plants (?). G. A. L.

——. Le Lias dans le Département de l'Orne.—Son étendue.—Ses fossiles. [Lias of the Orne; its extent, and its fossils.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 482–493; 2 figs.

The Sandstones of Ste.-Opportune, La Mousse, Briouze, etc., resting on the Granite of Ste.-Honorine, are referred to the Lias. The iron-ore of the plateaux (Joué-du-Plain, Les Yucteaux, etc.) is also Liassic. Many other localities for Lias are noticed, the rock itself differing according as it rests upon granite or Silurian beds. Lists of fossils are given. G. A. L.

Mortillet, — de. Sur la détermination exacte de la position du Solutréen. [Precise Position of the Solutrean Age.] *Bull. Soc. Anthrop. Paris*, sér. 3, t. i. p. 32, and *Mat. Hist. Homme*, sér. 2, t. x. p. 15.

Mourlon, M. Sur le gisement du Cachalot nain (*Physeterula Dubusii*, Van Beneden?). [Horizon of *Physeterula Dubusii*.] *Bull. Ac. Roy. Belg.* sér. 3, t. xlv. pp. 178–182.

The bed that yielded this Ziphioid Cetacean belongs to the Miocene, and to the group of beds with *Mesocetes*.

Moussaye, Count G. de la. La vallée de la Vesle aux environs de Courcelles (Aisne). [Valley of the Vesle, near Courcelles (Aisne).] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 32–37; 3 figs.

Describes the position of the Tertiary beds flanking the valley at different heights. Short lists of fossils are given, the laurel and the oak being mentioned as occurring in Pliocene deposits, a fact new to science. G. A. L.

Mühlberg, F. Zweiter Bericht über die Untersuchung der erratischen Bildungen im Aargau. [Second Report on the Erratic Formations of Aargau.] *Mitth. Aargau. nat. Ges.* Heft 1, p. 1.

The first Report was in 1869. List of large boulders. Notes on Drifts of two Glacial periods.

Müller, Prof. Albrecht. Ueber die anormalen Lagerungsverhältnisse im westlichen Basler Jura. [Abnormal Stratigraphical Phenomena in the Jura W. of Basle.] *Verh. nat. Ges. Basel*, Theil vi. Heft 3, pp. 428–462, folding sheet of sections.

Noticed by mistake in the GEOLOGICAL RECORD for 1877, p. 84.

Nathorst, A. G. Om ett s. k. stengärde samt om bottenmorängrus i närheten af Vestervik. [Esker Gravel, a Bottom-moraine at Vestervik, Sweden.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 163–166.

——. Beskrifning till kartbladet Gottenvik. No. 64. [Description of Gottenvik Sheet.] *Sver. Geol. Undersökn.* pp. 30; 3 woodcuts.

Account of the distribution and composition of the crystalline rocks and quaternary deposits. Analyses of gneiss, granular limestone, and shell beds given. E. E.

——. Beskrifning till kartbladen Landsort och Källskären, Nos. 65 & 66. [Description of Landsort and Källskären Sheets.] *Sver. Geol. Undersökn.* pp. 11. See *post*, under MAPS.

Negri, G., A. Stoppani, and G. Mercalli. [Geology of Italy.]

Part i. Formations constituting the country, by Prof Negri. Part ii. Glacial deposits, by Prof. Stoppani. Part iii. volcanoes and volcanic phenomena. G. A. L.

Nehring, Dr. A. [Note on Fossils from Westeregeln and Thiede.] *Zeitschr. gesamm. Nat.* Folg. 3, Bd. iii. pp. 335–338, 396, 397.

Records the occurrence, in Loess, of carbonized plant remains. Opposes the wind theory of Richthofen.

Nehring, Dr. Alfred. Die quaternären Faunen von Thiede und Westeregeln, nebst Spuren des vorgeschichtlichen Menschen. [Quaternary Fauna of Thiede and Westeregeln, with Traces of Prehistoric Man.] *Arch. Anthrop.* Bd. x. pp. 359–398, Bd. xi. pp. 1–24; 11 woodcuts.

Summary of fauna of the Loess, which is entirely of freshwater origin and of alluvial nature. 53 species are recorded, besides evidence of Man in burnt sticks, worked flints, &c. W. H. D.

Nevin, John. Notes of a Visit to some of the Collieries in the North-of-France Coal-field...... [*Trans.*] *Midland Inst. Eng.* [vol. 6], pp. 233–254; Discussion, pp. 255, 256, map.

Chiefly engineering, but refers to the geology, output, character of coal, &c. The map shows the limits of the coal-field and the position of borings. W. W.

Nicolas, H. Les grottes de Sisteron (Basses-Alps). [The Sisteron Caves.] *Mat. Hist. Homme*, sér. 2, t. ix. pp. 131.

Niepce, —. Terrains tertiaires des Alpes maritimes. [Tertiary Beds of the Maritime Alps.] 8vo. *Nice.*

Nordenström, G. Om jernmalmsförråden i Algeriet och vid Bilbao i Spanien. [Iron-ore deposits of Algeria and of Bilbao in Spain.] *Jernkontorets Annaler*, Bd. 33, pp. 351–382.

Under the following heads:—I. The iron-ore deposits of Algeria; *a.* Orographical and geological conditions; *b.* Mode of occurrence; *c.* Mode of mining; annual production. II. The iron-ore deposits at Bilbao. A geological and industrial map is given. Scale 1 to 2,400,000. E. E.

Olszewski, Dr. Stanislaw. Krótki rys wycieczki geologicznéj we W. Ksiestwie krakowskiem. [Short Sketch of a Geological Tour in the E. of the Krakow District.] *Sprawozd. Kom. Fiz. Krakow*, t. 12, pp. 247–285, pls. i., ii. (sections).

Details of Permian, Carboniferous, and igneous rocks, with analyses of coal by **Hauer** and **Giermansky**.

Omboni, Prof. G. Le Marocche, antiche morene mascherate da frane. [The Marocche, Ancient Moraines masked by Landslips.] Pp. 16. 8vo. *Milan.* [The greater part published in *Ann. Soc. Alpina Trentino*, 1875.]

Certain mounds in the Sarca valley between Arco and Toblino, known as the Marocche or Lavini di Drò, are moraines, though here and there the original surface of glacial origin has been masked by landslips. E. S. D.

Ortlieb, J. Note sur l'origine probable des bandes charbonneuses dans le sable landénien supérieur de Lewarde, etc. [Probable Origin of the Carbonaceous Layers in the U. Landonian Sands of Lewarde, etc.] *Ann. Soc. Géol. Nord*, t. v. pp. 65–67.

Pantanelli, Dr. Dante. Sul pliocene dei dintorni di Chianciano (Toscana). [Pliocene of Chianciano, Tuscany.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 10–19.

Gives a description of the beds, and lists of fossils.

Pantanelli, D., and **B. Lotti.** Sui marmi della Montagnola Senese. [Marble of the Montagnola, near Siena.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 384–495; 2 woodcut sections.

Describes the marble, and discusses its stratigraphical position.

Paul, K. M. Aufnahmen in Ostgalizien. [Surveying Notes from E. Galicia.] *Verh. k.-k. geol. Reichs.* pp. 94–96.

The divisions examined were:—Alluvium, Peat, Newer Terrace Drift, Löss, Berglehm, Neogene Salt-formation, U., M., and L. groups of the Carpathian Sandstone. G. A. L.

——. Zur Flyschfrage. [The Flysch Question.] *Verh. k.-k. geol. Reichs.* pp. 179–185.

Rejoinder to **Fuchs's** reply (see p. 69). Maintains the non-eruptive character of the Flysch.

Pellat, Edm. Terrain jurassique supérieur du Bas-Boulonnais. [U. Jurassic of the Bas Boulonnais.] *Ann. Soc. Géol. Nord,* t. v. pp. 173–195, pl. v. (sections), tabular view of formations.

Résumé of a more detailed monograph, shortly to be published, describing the Oxfordian, Corallian, Kimmeridgian, and Portlandian groups. Treats these under 29 heads, giving a brief account of each horizon, with its characteristic fossils, No. 28 being the "rudimentary equivalent" of the Purbeck beds. A. J. J-B.

——. Cinq excursions dans le terrain jurassique supérieur du Bas-Boulonnais. [U. Jurassic of the Bas Boulonnais.] *Ann. Soc. Géol. Nord,* t. v. pp. 195-216, woodcut.

Indicates 5 excursions which may be made in the Bas Boulonnais, and describes in more detail the sections which may thus be studied:—The cliffs north of Boulogne; the cliffs south of Boulogne; from Boulogne to Bréquerecque, Mont-Lambert, and Echinghen; from B. to the valleys of Quéhen, Hesdin, Brucdale, &c.; to Mont des Boucards, Houllefort, Wast, and Belle. A. J. J-B.

Pellat, —. Comparaison des niveaux kimméridgiens et portlandiens au Hâvre et dans le Boulonnais. [Kimmeridgian and Portlandian of Hâvre compared.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 551, 552.

Mere title, and few lines of discussion by **M. Lennier.**

Penck, Albrecht. Geognostische Karte von Mitteleuropa. [Geological Map of Central Europe.] Plate of sections and 4 small maps.

Descriptive text to accompany the map (see *post*), which is on a small scale, and at a low price for the use of students. The small maps show the distribution of ancient seas. G. A. L.

Péron, Alph. Note sur la place des Calcaires à Échinides de Rennes-les-Bains (Aude), et sur la classification du terrain turonien supérieur. [Position of the Echinid Limestone of Rennes-les-Bains, Aude, and Classification of the U. Turonian.] *Bull. Soc. Géol. France,* sér. 3, t. v. pp. 469–499; 2 woodcuts.

The Turonian of S. France consists of these six zones, in ascending order:—1, zone of *Inoceramus labiatus*; 2, Chalk of Touraine; 3, of *Radiolites cornu-pastoris*; 4, of *Micraster Matheroni*; 5, of *Ostrea proboscidea*; 6, of *Hippurites cornu-vaccinum.* The first two alone exist in Touraine; and to them the author would restrict the term *Turonian.* The rest (corresponding to the Angoumian, Mornasian, and Provencian of Coquand) should be referred to the U. Chalk. The Echinid limestone, underlying (or interbedded with) the Radiolite beds, is held to be of White Chalk (Senonian) age. G. A. L.

Perron, L. Les Carrières de Saillon. [The Saillon Quarries.] *Rev. Sci. Suisse,* p. 178.

Quarries in Cipolin marble. See GEOLOGICAL RECORD for 1877, p. 187.

Pettersen, K. Det nordlige Sveriges og Norges Geologi. [Geology of Northern Sweden and Norway.] *Arch. Math. Nat.* Bd. iii. pp. 1–38. 8vo.

Geological and petrological description under following heads:—Primitive rocks, Dividal group (Cambrian and Silurian), Tromsö mica-schist group (Cambrian and Silurian), and the youngest Höjfjeld group. A geological section from Saltdalen in Norway to Piteå town in Sweden is annexed. E. E.

berg/ ——. Om de i fast berg udgravede strandlinier. [Old Coast-lines in Solid Rock.] *Arch. Math. Nat.* Bd. iii. pp. 182–223, plate (sections).

Gives a special description of 8 such coast-lines on the coast from Tromsö to Trondhjem, the highest of which is 569 feet above the present sea-level; and an account of the probable origin of these terrace-shaped lines. Thinks that they are excavated by floating coast- and fjord-ice, and that the rise of the W. coast of the Scandinavian Peninsula has taken place slowly. E. E.

——. Schematisk oversigt over det nordlige Sveriges og Norges geologi. [Systematic Review of the Geology of N. Sweden and Norway.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 16, 17.

——. Det nordlige Norges gabbro-felter. [Gabbro Districts of N. Norway.] *Tromsö Museums Aarsh.* i. pp. 24–53.

Description of the petrographic characters of the gabbro and its occurrence in several districts between North Cape and the S. end of Lofoten. Three main types are separated—Saussurite-Gabbro of Lyngen (Saussurite with Smaragdite), Gabbro of Kaagen (Labradorite with brown, half-metallic Diallage), Eukrite of Seiland (Anorthite gabbro). Also diorite, olivine-stone, and Eklogite are described as found within the district. E. E.

Pettersen, K. Continentalmassers langsome seculare stigning eller sænkning. [Secular Rise or Submergence of Continents.] *Tromsö Museums Aarsh.* i. pp. 66–76.

Gives an account of some old sea-terraces in N.E. Norway.

Pichler, Adolph. Beiträge zur Geognosie Tirols. [Contributions to the Geology of Tyrol.] *N. Jahrb.* Heft ii. pp. 185–188.

Dr. Cathrein has discovered Eocene rocks near Wörgl. This is the most westerly occurrence in the Junthal, S. of the Inn. Describes the gabbro rocks of the Wildschönau. Two varieties of gabbro are found, one containing diallage. F. W. R.

Pilide, —. Sur le bassin néogène de la région située au nord de Ploesci (Valachie). [Neogene Basin of the Country N. of Ploesci, Wallachia.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 22–31.

The same stages as those of the Neogene of Austro-Hungary are recognized. The rock-salt of the region forms part of the first Mediterranean or *Schlier* deposits. The petroleum, although occurring in all the Tertiary Series, is chiefly found impregnating the Congeria Beds. G. A. L.

Pirona, G. A. Sulla Fauna Fossile Giurese del Monte Cavallo in Friuli. [Jurassic Fauna of Monte Cavallo, in Friuli.] *Mem. R. Ist. Veneto*, vol. xx. pt. 2, pp. 62; 9 plates (coloured map and sections and fossils).

The Jurassic beds of Monte Cavallo are briefly described, and a list is given of 76 species of mollusca found in them. From an examination of the list, the beds are correlated with the calcareous beds with *Terebratula janitor* in N. Sicily and the beds at Marles, near Montpellier, &c. The following new species are figured and described:—*Itieria obesa*, *I. Polcenici*, *I. decipiens*, *I. Caballi*, *Nerinæa Annæ*, *N. Taramellii*, *N. D'Achiardii*, *N. culturensis*, *Cryptoplocus Zignoi*, *Cerithium architectum*, and *C. forojuliense*. E. S. D.

Plattner, P. Geschichte des Bergbaus der östlichen Schweiz. [History of Mining in E. Switzerland.] 8vo. *Chur.*

Platz, P. [Glaciers of the Black Forest.] *N. Jahrb.* Heft 1, pp. 56, 57.

Note on recent observations of glacial action on rocks.

Ponzi, Prof. G. I Monti della Tolfa e la regione circostante. [Mt. Tolfa and its Neighbourhood.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 34–54. Extract from his 'La Tuscia romana e la Tolfa,' 1877. Partly noticed in the GEOLOGICAL RECORD for 1877, p. 191.

Notices the stratified rocks (Eocene to Recent), the eruptive rocks, the metamorphic rocks (igneous and sedimentary), and the economic products. W. W.

economic

Ponzi, Prof. G. Sulle epoche del vulcanismo italiano. [Epochs of Italian Vulcanicity.] *Atti R. Ac. Linc.* ser. 3, *Trans.* vol. ii. pp. 35–37.

Agrees with Dr. Branco that the principal Italian volcanic products are of Glacial date, the subsequent action diminishing in area down to the present time. W. H. D.

——. Le ossa fossili subapennine dei contorni di Roma. [Subapennine Fossil Bones from the Rome District.] *Atti R. Ac. Linc.* ser. 3, *Mem.* vol. ii. pp. 709–736.

Sketches the newer Tertiary geology—Miocene, Pliocene, Volcanico-Glacial, and Postglacial, noting the Vertebrata of the Pre- and Post-glacial. W. H. D.

Posewitz, Dr. Theodor. [Diluvial Lake in the Igloc Valley.] *Földt. Közl.* köt. viii. sz. 2.

Potier, —. Compte-rendu d'une course faite aux environs de Fréjus. [Excursion near Fréjus.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 741, 742.

Account of a short walk to the Arènes and up to the Reyran valley. Spilitic melaphyre encased in red and white porphyritic grits, Pliocene, and Quaternary beds were seen. G. A. L.

——. Compte-rendu de la course de l'Estérel. [Excursion to Estérel.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 745–751.

Notes the rocks met with on the road to and from Estérel, and the Coal mines of Auriasque and Boson. The Coal Measures are covered by a sheet of red porphyry, above which Permian rocks are developed. The pitchstone dykes at the Colle de Gram were visited. In the discussion Messrs. **Coquand** and **Saporta** add several details (pp. 751–754). G. A. L.

——. Compte-rendu de la course de Saint-Raphaël et d'Agay. [Excursion to St.-Raphaël and Agay.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 754–758.

Permian red grits with porphyritic blocks passing into red shales, dykes of melaphyre, &c. and the so-called "blue porphyry" worked by the Romans (oligophyre). Ferrières mine (now closed); vein of magnetite and pyrite. G. A. L.

——. Compte-rendu de la course de Vallauris. [Excursion to Vallauris.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 765–767.

Muschelkalk, Gypsum quarry, *Avicula contorta* beds, Inf. Oolite.

——. Compte-rendu de la course de Biot. [Excursion to Biot.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 769–773, figure in text.

Eocene, ? Miocene, Post-Pliocene, and Pliocene deposits, trachyte, manganese mines, &c. A somewhat fuller description of the Tertiaries of Biot is given in the discussion by **Prof. Coquand** and others (pp. 773–778). G. A. L.

Potier, —. Compte-rendu de la course de la Grotte de Mars et des carrières de la Sine. [Excursion to the Cave of Mars and the Sine Quarries.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 784–788.

In the cave several new species of *Felis* and *Ursus* had been found. The quarries are in a white limestone, 15 mètres thick, with *Nerineæ* and *Terebratulæ*. G. A. L.

——. Compte-rendu de la course de St.-Jeannet et de La Gaude. [Excursion to St.-Jeannet and La Gaude.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 788–791, pl. xvi. (map by **Edm. Blanc**).

Above the Cretaceous the following series was determined in ascending order:—1. Variegated sands and clays, and lacustrine Limestone. 2. Nummulitic deposits. 3. Molasse, with grey sandy marls with *Flabellum* at top. 4. Pliocene fossiliferous marls and conglomerates. In the discussion additional information respecting these beds and their equivalence is given by **Matheron, Lory, Renevier, Hébert,** and **Coquand** (pp. 791–795). G. A. L.

——. Compte-rendu de la course d'Aspremont et de Tourette. [Excursion to Aspremont and Tourette.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 796–798.

From Nice to Aspremont and from Tourette to Nice. Jurassic, Cretaceous, and Tertiary rocks.

——. Le tunnel du Pas-de-Calais au point de vue géologique. [The Channel Tunnel from a Geological Point of view.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 530–536.

Explains the operations for the purpose of testing the geology of the Channel bottom. Concludes that in the Cenomanian chalk only is the Tunnel practicable, and that the folds of that division will necessitate no curve of a less radius than 1200 mètres. G. A. L.

Potier, A., and **A. de Lapparent.** Note sur l'exploration géologique du Pas-de-Calais. [Geological Exploration of the Straits of Dover.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 630–632.

Point out the general results of the sounding-bores in the Channel bottom, showing that the proposed tunnel, if carried out in the Grey Chalk throughout, must necessarily be curvilinear, a conclusion which **Prof. Hébert** says, in the discussion, fully confirmed his statements. G. A. L.

Prendel, R. Otviete na statu H. Milaschewitcha. [On Milaschewitch's Article on Fossils of Crimean Cretaceous Rocks.] *Bull. Soc. Imp. Nat. Mosc.* t. lii. pt. 2, p. 308.

Deals with stratigraphical questions. See Geological Record for 1877, p. 316.

——. Nieskolko Slove po Povody Otvieta H. Milaschewitcha. [Reply to Milaschewitch's Memoir, noticed on p. 93.] *Bull. Soc. Imp. Nat. Mosc.* t. liii. pp. 390–394.

Defends his views of the Crimean Beds being transitional between Cretaceous and Eocene, quoting Coquand as on the same side.

Puiseux, P. Ascensions de l'Aiguille de Péclet et de la Grande-Motte (Savoie). [Ascents of the Aiguille de Péclet and the Grande-Motte, Savoy.] *Ann. Club alp. Franç.* ann. 4, p. 152.

Contains matter of geological interest.

Rabot, C. Douze jours dans les Alpes dolomitiques. [Twelve Days in the Dolomite Mts.] *Ann. Club. alp. Franç.* ann. 4, p. 321.

Contains geological observations.

Raffelt, R. Geologische Notizen aus Böhmen. 1. Eine neue Fundstätte für Tertiärpflanzen im Leitmeritzer Mittelgebirge. [Geological Notes from Bohemia. 1. A new Locality for Tertiary Plants in the Leitmeritz Central Range.] *Verh. k.-k. geol. Reichs.* pp. 359, 360.

A list of plants is given, showing the beds to be Miocene.

Ramsay, [Prof.] A. C. The Geology of Gibraltar and the Opposite Coast of Africa; and the History of the Mediterranean Sea. *Proc. R. Inst.* vol. viii. pp. 594–601.

1. What is now the Mediterranean area, in old times consisted of a wide land surface chiefly formed of Miocene strata. 2. The Alps, the Pyrenees, the Atlas, and other mountain chains underwent renewed upheaval, accompanied by contemporaneous depression of the Mediterranean area. This closed the Miocene epoch. 3. The greatest extent of the Mediterranean Sea was in the Pliocene epoch. 4. Partial elevation of the mouth of the Mediterranean, and probably of the ground between Sicily and Africa, permitted the migration of African mammals into Europe at a time when the inner parts of that sea formed three great and deep salt lakes, in what then was and still is a western continuation of the great Asiatic area of inland drainage. R. B. N.

Ramsay, Prof. A. C., and Dr. J. Geikie. On the Geology of Gibraltar. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 505–541, pl. xxiii. (map) and folding sheet of woodcuts.

Give the bibliography of the subject, and describe the physical geography and the geology of the Rock, which consists of L. Jurassic limestones and shale with important masses of detritus of recent date, the mode of accumulation of which is fully discussed, two periods of colder climate than the present being established, with oscillations. The geology of the neighbourhood (Pliocene, Miocene, and older rocks) is touched upon, and also that of the Tangier coast (Silurian?, Carboniferous?, and Recent). W. H. D.

Rath, G. vom. [Icelandic Volcanoes.] *N. Jahrb.* Heft i. pp. 52, 53.

On the transport of fine volcanic dust from Iceland to the Baltic coast.

Raulin, V. Aperçu sur l'orographie, la géologie et l'hydrographie de la France. [Orography, Geology, and Hydrography of France.] *Dictionnaire encyclopédique des sciences médicales. Paris.*

Raumer, Ernst v. Beitrag zur Kenntniss der fränkischen Liasgesteine. [French Lias.] 8vo. *Paris* and *Berlin*. Pp. 21.

Reclus, Élisée. Nouvelle Géographie Universelle La Terre et les Hommes. iii. Europe Centrale (Suisse, Austro-Hongrie, Allemagne). 4to. *Paris*. Pp. 983; 10 maps.

Pl. 1 is a geological map of the St. Gothard Mountains. Figs. 16, Ancient glaciers of W. Switzerland; 59, Mineral region of Eisenerz and Vordenberg; 68, Ancient courses of the Danube at Vienna; 117, Volcanic Mts. of N. Bohemia; 120, Coal-Mines of N. Bohemia; 176, Peat of Coesfeld. W. W.

Renevier, Prof. E. Structure Géologique du Massif du Simplon à propos du Tunnel projeté. [Geology of the Simplon.] *Bull. Soc. Vaud. Sci. Nat.* vol. xv. no. 79, pp. 281–304, pls. 20, 21 (sections). Translated into Italian in *Bol. R. Com. geol. Ital.* vol. ix. pp. 286–300.

Describes two lines of section between the Vedro and Rhone Valleys, showing:—1, Antigorio Gneiss (anticlinal); 2, Crystalline Schists; 3, Dolomite of the Ganther Valley; 4, Lustrous Slates (synclinal); 5, Gypsum and Dolomite of the Rhone Valley. Nos. 3–5 are early secondary; the metamorphic rocks are older. W. H. D.

Reusch, H. H. Iakttagelser over isskuret Fjeld og forvitret Fjeld. [Iceworn and Weathered Rocks.] *Forh. Vid.-Selsk. Christiania*, pp. 1–27; 25 woodcuts.

The examples of fresh, ice-worn rocks are taken from Norway, and those of weather-worn rocks from Corsica.

——. Et besög i titanjerngruberne ved Sogndal. [A Visit to the Titaniferous Iron (Ilmenite) Mines at Sogndal, Norway.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 197–201, plate.

The ore occurs in a massive labrador-stone, sometimes in vein-like streaks, and pure.

Reymond, F. Ascension du Grand-Paradis. [Ascent of the Grand-Paradis.] *Ann. Club alp. Franç.* ann. 4, p. 313.

Contains a few geological notes.

Ribeiro, Carlos. Estudos Prehistoricos em Portugal. Noticia de algumas Estações e Monumentos Prehistoricos. [Prehistoric Stations and Monuments in Portugal.] Pp. 69 & 72; 21 plates and woodcuts. 4to. *Lisbon*. [The 72 pp. are a French version.]

Relates to the prehistoric station of Licea, near Barcarena. Gives a general sketch of the orography and geology of Barcarena and Bellas, W. of Lisbon (Cretaceous with basalt above). T. W. N.

Riedl, E. Das Schwefelkies-Vorkommen des Sannthales. [Pyrites in the Sannthal.] *Oesterr. Zeitsch. Berg- Hütt.* no. 50.

The iron-pyrites occurs associated with porphyritic rocks, and is worked near Piereschitz-Schlesno only. The pyritiferous rocks, however, spread over a considerable region. G. A. L.

Rieger, S. Ein Beitrag über mineralogische und geologische Vorkommnisse in den Umgebungen von Eisenkappel in Kärnten. [Geology and Mineralogy of the Country round Eisenkappel, in Carinthia.] *Jahrb. österr. Touristen-Club*, ix.

Describes a collection of rocks, minerals, and fossils relating to the district.

Rigaud, F. Notice sur les minières de la Haute Marne. [Iron-ore Deposits of Haute Marne.] *Ann. Mines*, sér. 7, t. xiv. pp. 5–62.

These ores are thus distributed:—M. Lias, ore in place; U. Lias and L. Oxfordian, ore in place and alluvial; L. Neocomian, ore *remanié* and in place; U. Neocomian, ore in place. These deposits are described, with analyses of ore, &c. G. A. L.

Rigaux, E. The Fossil Brachiopoda of the Boulonnais. *Geol. Mag.* dec. ii. vol. v. pp. 436–443.

A list of the species, arranged stratigraphically in the following divisions:—*Devonian* including the Blacourt Limestone, the Beaulieu Shales (in four zones), the Ferques Limestone, and Sandy Limestone; *Carboniferous*, including the Lower and Upper Limestones; *L. Great Oolite*; *U. Great Oolite*; *Cornbrash*, *Kelloway Rock*; *Oxford Clay*; *L. Grit*; *Coralline Limestone*; *Supracoralline*; *Kimmeridge Clay*; *Portlandian.* G. A. L.

Ritter, H. Das Kohlenvorkommen von Dolni Tuzla in Bosnien. [Occurrence of Coal at Dolni Tuzla, in Bosnia.] *Verh. k.-k. geol. Reichs.* pp. 375–377.

This townlet lies on the Jalla river, whose valley is there about 3 miles across. Its formations are Tertiary, and consist of sandstone, shale, and clay. Among these a workable seam of Browncoal occurs. G. A. L.

Robert, Félix. Volcans de la Haute-Loire. [Volcanoes of Haute Loire.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 40–45.

The conclusion, comprising the "5th Age."—Volcanoes with scoriæ of Pliocene age; these are the volcanoes of Courant, Peyre-Amout, Boury, Bar, Ste.-Anne, Solilhac, and Doue. "6th Age."—Modern basaltic volcanoes of Quaternary age; these are those of La Durande, Vergezac, Le Bouchet, Breysse, Grand-Breysse, Petit-Breysse, and Denise. The eruption of the last-named volcano overwhelmed a tribe of prehistoric men, the remains of whom are found in a coulée in the vale of Polignac, together with bones of *Hippopotamus*, *Rhinoceros*, the Mammoth, and other mammals, of which a list is given. G. A. L.

——. Observations sur les Alluvions marines et les Marnes irisées du bassin du Puy. [On the Marine Alluvia and Keuper of the Basin of the Puy.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 46, 47.

At the beginning of the Tertiary period the region was a series of lakes, communicating with those of Auvergne, and finally with the ocean. G. A. L.

Rochata, Carl. Die alten Bergbaue auf Edelmetalle in Oberkärnten. [The Old Noble-Metal Mines of Upper Carinthia.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 213-368, pls. vii.-x.

Gives a full historical, statistical, and geological account of the old workings of the country, the chief ores referred to being gold, argentite, sylvanite, gold- and silver-bearing pyrites, argentiferous galena, gold- and silver-bearing arsenopyrite, quicksilver, and cinnabar. G. A. L.

Rodwell, G. F. Etna: a history of the mountain and its eruptions. 8vo. *London.* Pp. 146; 13 illustrations. Price 9*s.*

The last chapter treats of the geology and mineralogy of the mountain; it contains results of analyses of lavas, as well as a notice, by **Frank Rutley**, of the mineral constitution and microscopic characters of some of the lavas of Etna. A coloured geological map of the volcano is given. T. W. D.

Römer, F. Ueber eine Sammlung von neu aufgefundenen marinen Versteinerungen aus dem Steinkohlengebirge von Gräfin Laura-Grube bei Königshütte in Oberschlesien. [New Marine Carboniferous Fossils from Coal Measures of U. Silesia.] *Jahres-Ber. schles. Ges.* pp. 51-53 [dated on title 1879]; reprinted in *N. Jahrb.* pp. 890-892 [1878].

Gives section and list of 56 fossils.

Rolland-Banès, L. Des moyens de développer et d'accroître la richesse minérale de la France. [Means of developing the Mineral Resources of France.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 459-467.

Points out several spots in France where borings might be put down with a possibility of finding coal, salt, or gypsum.

——. Sur la recherche de la houille dans le département de la Seine-Inférieure. [Search for Coal in Seine-Inférieure.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 529, 530.

Reference to the author's report on this subject, published in 1873 by the Council-General of the Department.

Rolle, F. Geologische Uebersicht der geologischen Verhältnisse der Landschaft Chiavenna in Ober-Italien. [Geology of the Chiavenna District]. 8vo. *Wiesbaden.*

Describes a district of greatly contorted rocks, consisting of gneiss, verrucano, Trias and Lias, all much metamorphosed. W. H. D.

Rothpletz, A. Section Frohburg. Blatt 59. [Explanation of the Frohburg Sheet (59) of the Geological Survey of Saxony.] *Erläut. geol. Specialkarte Sachs.* pp. 61. 8vo. *Leipzig.* Price 1*s.*

Describes the petrography, range, palæontology, &c. of L. Silurian, U. Devonian, Dyas, Trias, L. Oligocene, Diluvium, and Alluvium. The M. Rothliegende consists of tuffs and porphyritic rocks, in which a siliceous sinter (*Terpitzite*, n. sp.) occurs, analysis being given. Accounts of many borings, &c. are appended. W. H. D.

Rouzand, H. Note sur la composition du terrain lacustre de Narbonne et Sigean. [Lacustrine Deposits of Narbonne and Sigean.] *Bull. Soc. Sci. Nat. Béziers*, ann. 3, p. 16; 2 pls.

Rutot, A. Note sur le démembrement du Système Laekenien et la création du Système Wemmelien. [Dismemberment of the Laekenian and Creation of the Wemmelian System.] *Ann. Soc. Géol. Nord*, t. v. pp. 488–497.

The series called Laekenian fall naturally into two divisions. Proposes to separate the upper under the name of Wemmelian, correlating it with the Sables de Beauchamp and the Barton and U. Bagshot series in England. Lists of fossils from both divisions are given. The lower beds are correlated with the Calcaire Grossier. A. J. J-B.

——. [*Limnæa* in the L. Landenian Psammite.] *Ann. Soc. Géol. Belg.* t. v. p. xci.

Note of occurrence at Angre.

Rutot, A., and **E. Vanden Broeck.** Excursion géologique dans le Limbourg. Compte rendu des Journées du 29 et du 30 Septembre. [Excursion to Limburg.] *Ann. Soc. Géol. Belg.* t. v. p. cxli.

The first day was devoted to the Bolderberg, the second to Hasselt, Klein-Spauwen, &c. This account is in stratigraphical order, as follows:—L. and M. Oligocene, Quaternary. An account is given of the cuttings on the new railway between Tongres and Hénis, and near Kerniel (plate). W. W.

Rzehak, Anton. Ablagerungen jurassischer Gerölle bei Tieschan in Mähren. [Deposits of Jurassic Gravels near Tieschan, in Moravia.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 1-8.

Discusses the origin of these Drift gravels, which occur at a height of 1041 feet above the sea, and gives a list of the fossils found in them. Among these the following new species are mentioned, but not described—*Diploconus Stohandli* and *Prosopon læve.* The list includes 13 Pelecypoda, 7 Gasteropoda, 5 Corals, 4 Brachiopoda, 2 Cephalopoda, 2 Echinoderms, and 1 Crustacean. G. A. L.

Sabatier-Desarnauds, —. Note sur les terrains quaternaires des environs de Béziers. [Quaternary of Béziers.] *Bull. Soc. Sci. Nat. Béziers*, ann. 3, p. 6.

Saitzeff, —. [Geological Researches on the R. Kama.] *Trudy Obsch. Estest imp. Univ. Kazan*, kn. vii.

The pebble-beds mentioned by Stukenberg (see below, p. 111) are of diluvial age.

Salis, F. von. Die Theiler-Rufi bei Jenins. [Landslip in the Theiler-Rufi Valley, Grisons.] *Jahrb. Schweiz. Alpenclub*, Bd. xiii.

Saporta, Count G. de. Les anciens climats de l'Europe et le développement de la végétation. [Ancient Climates of Europe and the Development of Vegetation.] *Rev. Sci.* p. 741.

Sauer, A. *Paludina diluviana*, Kth., im Diluvium bei Leipzig. [*P. diluviana* in the Drift near Leipzig]. *N. Jahrb.* Heft iv. pp. 392–394.

Records the discovery of this shell in what is regarded as *Upper* Diluvium, while hitherto this species has been confined to the *Lower* Diluvium. F. W. R.

Schalch, Dr. F. Section Geyer. Blatt 127. [Explanation of the Geyer Sheet (127) of the Geological Survey of Saxony.] Pp. 71. 8vo. *Leipzig*. Price 1*s*.

Describes Archæan gneiss, mica-schist, limestone (with beds of garnet-rock, actinolite-schist, pyrites, and magnetite), clay-slate, granite, syenite, Alluvium, and the analyses of limestone and granite. W. H. D.

——. *N. Jahrb.* Heft viii. pp. 831–835.

Notes on details of geological work in the neighbourhood of Schaffhausen.

Schmidt, E. Geognostische Beschreibung des mittleren und westlichen Theiles der Kreishauptmannschaft Bautzen nebst kurzer mikroskopischer Physiographie der Gesteine und einer geognostischen Karte. [Geology and Petrology of the Bautzen District.] Pp. 59, map. 8vo. *Bautzen*.

Describes Cambrian, Cretaceous, Tertiary, and Quaternary beds and Igneous rocks.

Schrader, Fr. Montagnes de Bielsa et Pic de Cotiella (Pyrénées françaises et espagnoles). [The Bielsa Mountains and the Pic de Cotiella, French and Spanish Pyrenees.] *Ann. Club alp. Franç.* for 1877, 4 ann. p. 17.

Contain geological notes.

Schroeckinger, J. von. Ueber die Erbohrung einer neuen Therme bei Brux. [Discovery by boring of a new Thermal Spring near Brux.] *Verh. k.-k. geol. Reichs.* pp. 89–94.

A spring with a temperature of 26°·2 C. was tapped in a boring for coal at a depth of 127·36 metres. A measured section of the beds and detailed analyses of the water are given. G. A. L.

Schütze, Dir. Ueber das angebliche Vorkommen der *Sphenopteris distans* in Manebach. [Alleged occurrence of *S. distans* at Manebach.] *Verh. k.-k. geol. Reichs.* pp. 209–211.

Denies the possibility of the occurrence of this species at the Coal-measure horizon of the locality named.

Schumacher, E. Ueber die Kalklager der Strehlener Gegend. [Limestones of the Strehlen District.] 8vo. *Breslau.*

Seeland, F. Der Bergbau auf Rotheisenstein und Braunstein auf dem Kok, nordwestlich von Uggowitz. [Manganese and Hæmatite Mines on the Kok, N.W. of Uggowitz.] *Verh. k.-k. geol. Reichs.* pp. 36, 37.

The ores occur in layers, lying conformably between beds of marble-like Orthoceras limestones (Carboniferous Limestone). The manganese-ore contains from 40·19 to 51·6 per cent. of manganese, and the hæmatite about 52·68 of iron. G. A. L.

Seelheim, F. Sur des tourbières d'eau saumâtre. [Brackish-water Peat Bogs.] *Arch. Néerl.* t. xiii. pp. 466–477.

Describes the peat of Zealand, and concludes that it has been formed in brackish water.

Segond, H. Etude sur les Trias. *Feuille des Jeunes Naturalistes.*

Seguenza, Prof. G. Studî geologici e paleontologici sul Cretaceo medio dell' Italia Meridionale. [M. Cretaceous of S. Italy.] *Atti R. Ac. Linc.* ser. 3. *Trans.* vol. ii. pp. 103–106.

Notice of a work describing the beds and their fossils (of which 100 are new species), to be published in full.

Sexe, S. A. Om Skandinaviens vertikale Svingninger. [Vertical Oscillations of Scandinavia.] *Arch. Math. Nat.* Bd. iii. H. 2.

Siegert, —. [Culm near Chemnitz.] *N. Jahrb.* Heft vi. pp. 640, 641.

Recent discovery of fossiliferous clay-slate in beds hitherto regarded as Rothliegende. The fossils are *Sagenaria* (*Lepidodendron*) *Veltheimiana*, *Stigmaria inæqualis*, and *Calamites transitionis*. The bed belongs therefore to the Culm series. Locality, between Borna and Glösa, N. of Chemnitz. F. W. R.

Simpson, J. B. An Account of the Condition of the Mining Industries of Prussia in the year 1875. *Trans. N. Engl. Inst. Eng.* vol. xxvii. pp. 25-70, 294–296 (with discussion).

Statistical, with notes of boreholes, pp. 37–40.

Sirodot, —. Age du gisement de Mont-Dol (Ille-et-Vilaine). [Age of the Mt.-Dol Deposit, Ille-et-Vilaine.] *Compt. Rend.* t. lxxxvii. pp. 222–225.

Gives the results of recent well-sinkings. These show that the deposit is comprised within a talus-formed marine accumulation, much older than any of the recent beds. G. A. L.

Sirodot, —. Age du gisement de Mont-Dol. Constitution et mode de formation de la plaine basse dite *Marais* de Dol. [Composition and Mode of Formation of the Dol Marshes.] *Compt. Rend.* t. lxxxvii. pp. 267–269.

This marshy plain consists of alternations of peat and "tangue" beds (layers of sea-weed, &c.), with sands resting on a granitic conglomerate. The deposits are referred to the close of the Glacial period. G. A. L.

Stapff, Em. [St. Gotthard Tunnel.] *N. Jahrb.* Heft vii. pp. 725–727.

Criticises the published description of the geology of this tunnel.

——. Materialen für das Gotthardprofil Schichtenbau des Ursernthales. [Geology of the Ursern Valley.]

Mount St. Gothard is a great synclinal, with an anticlinal fold in the middle, and small lateral folds.

Staub, Dr. Moriz. [Sketch of the Mecsek Mts. in Tertiary Times.] *Földt. Közl.* köt. viii. sz. 3. see page 380.

Stefani, Carlo de. Sulle serpentine e sui graniti eocenici superiori dell' alta Garfagnana. [Serpentine and Granite of U. Eocene, Garfagnana.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 19–29.

Gives facts and reasonings supplementary to a previous paper. See GEOLOGICAL RECORD for 1876, p. 112.

——. Sull' epoca degli strati di Pikermi. [Age of the Pikermi Beds.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 396–405.

In reply to Fuchs (see p. 69), reasserts that the beds of Pikermi, in Greece, are Miocene, and not Pliocene.

——. Das Verhältniss der jüngeren Tertiärbildungen Oesterreich-Ungarns zu den Pliocänbildungen Italiens. [Relations of the younger Tertiaries of Austria to the Pliocene of Italy.] *Verh. k.-k. geol. Reichs.* pp. 202–205.

Summarizes his views in the following Table :—

	Austro-Hungary.	*Italy.*	*Equivalents.*
PLIOCENE.	Bribir Beds with *Mastodon.*	Freshwater Beds of Arno, Sieve, &c.	Marine and freshwater beds of Montpellier, Tunis, Algiers, &c.
	Melanopsis Marls.	Marine Beds.	
		Brackish - water Beds with *Potamides*, &c., of Siena, &c.	Crag of England, Belgium, &c.
U. MIOCENE.	Belvedere Beds and Sands.	Casino Beds.	Clay of Pikermi. Alcoyek.
	Paludina Beds.		Diestian of Belgium.
	Congeria Beds.		

G. A. L.

Stefani, Carlo de. Sulle tracce attribuite all' uomo pliocenico nel Senese. [Pliocene Man in the Senese.] *Atti R. Ac. Linc.* ser. 3, *Mem.* vol. ii. pp. 17–23.

Describes the series from which bones of *Balænotus*, said to be carved, have been obtained. The fauna shows them to be of moderately deep-water origin, and the shore was distant. The implements alleged to be found in beds of like age are probably derived from the surface. See **Capellini**, GEOLOGICAL RECORD for 1876, p. 52.
W. H. D.

——. [Chronology of the Tuscan Volcanos.] *Proc.-verb. Soc. Tosc. Sci. Nat. Pisa*, vol. i. pp. xxi, xxii.

Divides the mountains into 5 groups:—Pitigliano, leucitophyres and tuffs; Mt. Amiata, trachyte; Roccastrada, rhyolite; Radicofani, basalt and scoria; Monte Catini, andesite. The last is M. Miocene; the others are Pliocene and Postpliocene. W. H. D.

——. [Chronology of the Tuscan Tertiaries.] *Proc.-verb. Soc. Tosc. Sci. Nat. Pisa*, vol. i. pp. xxvi–xxviii.

Gives details of Eocene, Miocene, and Pliocene beds.

——. [Fragmentary Clays (Argille Galestrine).] *Proc.-verb. Soc. Tosc. Sci. Nat. Pisa*, vol. i. pp. xxxx–xxxxiv.

These fine clays, breaking into rounded fragments, occur in the U. Lias, M. and U. Cretaceous, U. Eocene, and M. Miocene. Their structure has been referred to aqueous alteration, internal movements, volcanic eruption, and oceanic deposition. The last theory is safest.
W. H. D.

Sterzel, Dr. —. [Geological Survey of Saxony.] *N. Jahrb.* Heft vii. pp. 729–733.

Notes on recent discoveries of fossils in the course of this Survey. With a postscript by **Dr. H. B. Geinitz.**

Stöhr, Emilio. Sulla posizione geologica del tufo e del tripoli nella zona solfifera di Sicilia. [Position of the Tuff and Tripoli of the Sulphur Zone of Sicily.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 498–518.

Describes the tuff and tripoli, gives a list of fossils, which are principally Foraminifera and Radiolariæ, and refers the beds to the Tortonian. Gives an analysis of the tuff by **A. Schwager.** E. S. D.

Stoppani, A. Geologia d'Italia. Part of 'L'Italia sotto l'aspetto fisico . . . . etc.' Pp. 78; 6 pls. 4to. *Milan.* Partly extracted under the title "Carattere marino dei grandi anfiteatri morenici dell' Alta Italia," in *Boll. R. Com. geol. Ital.* vol. ix. pp. 530, 531.

Streng, Dr. A. Ueber die Basaltdurchbrüche am Wetteberge bei Giessen. [Basalt Quarry in the Wetteberg, near Giessen.] 17 *Ber. oberhess. Ges.* pp. 42, 43.

Streng, Dr. A. Ueber das Schlacken Agglomerat von Michaelnau bei Nidda. [Volcanic Agglomerate near Nidda.] 17 *Ber. oberhess. Ges.* pp. 44, 45.

——. Die geologische Geschichte des Rheinthals. [Geological History of the Rhine Valley.] 17 *Ber. oberhess. Ges.* pp. 104, 105.

Sketch of geological events after the first elevation of the Devonian slate rocks (? in L. Triassic times).

Strippelmann, L. Die Tiefbohrung auf Steinkohlen zu Malkowitz bei Schlau in Böhmen. [Deep Boring for Coal at Malkowitz, near Schlau, Bohemia.] *Zeitschr. berg- hütt. Ver. Steierm. Kärnten*, nos. 3–6, February and March.

The boring was 1857 feet deep, Silurian rocks being first reached at about 1800. No workable coal-seam was met with in the Coal Measures beneath the Rothliegendes. G. A. L.

Struckman, C. Der obere Jura der Umgegend von Hannover. [U. Jurassic of Hanover.] Pp. viii, 169; 8 pls. (fossils). 8vo. *Hanover*.

Describes Oxfordian, Corallian, Kimmeridgian, Portlandian, and Purbeck beds, giving full lists of fossils and bibliography, correlating the beds with those of Swabia, Switzerland, and France. Critically discusses some of the fossils, and describes the following new species—*Trochus Calenbergensis* (M. Kim.), *Phasianella Kimmeridiensis* (Cor. & L. Kim.), *Chemnitzia Sancti Antonii* (Cor.), and *C. Lorioli* (U. Kim. & L. Portl.). W. H. D.

Stukenberg, A. A. Po povodie zamietki B. I. Molleri, ke Geologitcheskomy otcherkii Oujnoi tchasti Nijegorodskoi Gubernii. [On Moeller's Geological Sketch of S. Nijni Novgorod, noticed in the GEOLOGICAL RECORD for 1876, p. 95.]

Stur, D. Geologische Verhältnisse des Jemnik-Schachtes der Steinkohlen-Bergbau-Actien-Gesellschaft "Humboldt" bei Schlau im Kladnoer Becken. [Geology of the Jemnik Pit of the Humboldt Colliery at Schlau, in the Kladno Basin.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 369–386; 2 figs. in text. Preliminary note in *Verh. k.-k. geol. Reichs.* pp. 196, 197.

Gives a detailed description of the rocks sunk through, which belong to the Zeměch and Radnitz Beds (the lowest Carboniferous divisions of the region, resting on Silurian, which was reached at a depth of 504·3 metres). Lists of plants characterizing the various horizons cut through are given. Special attention is paid to the microscopic organism described by K. Feistmantel the elder as *Bacillarites problematicus*, which occurs in this locality (unaccompanied, however, by any other Diatoms), and of which two enlarged figures are given. G. A. L.

——. Vorlage seiner Culm-Flora der Ostrauer und Waldenburger

Schichten. [Account of his "Culm Flora of the Ostrau and Waldenburg Beds."] *Verh. k.-k. geol. Reichs.* pp. 38–46.

Comprises a table of equivalence (Devonian to Permian) of the beds of:—1. The Ostrau margin of the Silesio-Polish Basin; 2. The Bohemo-Silesian Basin; 3. Rossitz on the S. foot of the Riesen-Gebirge; 4. Schwarzkostelctz, Budweis, and Zöbing; 5. Lodève. Part 1 of the work is noticed in the GEOLOGICAL RECORD for 1877, p. 377. G. A. L.

Stur, D. Ad vocem: *Halobia* und *Monotis* von der Hohenwand in der Neuen-Welt bei W. Neustadt. [*Halobia* and *Monotis* near W. Neustadt.] *Verh. k.-k. geol. Reichs.* p. 185.

These fossils were found in the Hohenwand, in the neighbourhood of Vienna, as early as 1850. An answer to **Bittner's** paper (see p. 49).

Svedmark, E. Halle- och Hunnebergs trapp. [Trap of the Halle and Hunneberg Mountains, Sweden.] *Sver. Geol. Undersökn.* pp. 35.

An historical, physical, and geological description of the mountains, and an account of the composition, mode of occurrence, and microscopical structure of the rock are given. It is a diabase, free from olivine, and is characterized by salite. Analyses given. Comparison made with diabases from other Swedish localities. E. E.

Szabo, Prof. Jozsef. [Petrology and Geology of the District of Schemnitz.] *Földt. Közl.* Köt. viii. sz. 1, 2, 3.

Taramelli, Prof. T. Sulla Formazione serpentinosa dell' Apennino Pavese. [Serpentine Formation of the Pavian Apennines.] *Atti R. Ac. Linc.* ser. 3, *Trans.* vol. ii. pp. 155–158; *Mem.* vol. ii. pp. 652–708; 3 pls. (maps and sections).

The ophiolitic rocks accord in strike, and are interbedded with the U. Eocene (Ligurian), to which the Miocene (Aquitanian) are unconformable. The petrological examination of the 9 varieties of ophiolite and of the granitic conglomerate with chlorite paste (microscopically described by **Prof. Cossa**) lead to the conclusion that the ophiolites are low-temperature rocks erupted in a shallow Eocene sea, and but slightly altered. The gabbros are volcanic muds mixed with other sediments. W. H. D.

——. Del granito nella formazione serpentinosa del Apennino Pavese. [Granite of the Serpentine Formation of the Pavian Apennines.] *Rend. R. Ist. Lomb.* ser. 2, vol. xi. pp. 63–87.

Describes the range and relations of the granite to other rocks.

——. Alcune osservazioni geologiche sul Carso di Trieste e sulla valle del fiume Recca, stabilite in occasione di un progetto di derivazione di questa fiume in città mediante una galeria di 14 chilometri. [Geology of the Carso of Trieste.] *Rend. R. Ist. Lomb.* ser. 2, vol. xi. pp. 289–305.

Chiefly hydrographical, but has notes on the Cretaceous, Eocene, Miocene, and Pliocene rocks.

Taramelli, Prof. T. Descrizione geognostica del Margraviato d'Istria, con carta geologica dell' Istria e delle isole del Quarnero. [Geology of Istria.] *Milan.* Price 5 lire. Noticed in *Boll. R. Com. geol. Ital.* vol. ix. pp. 329–331.

Tardy, A. Aperçu sur la région Sud-Est du bassin de la Saône. [S.E. part of the Basin of the Saône.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 698–731.

Traces the geological history of the Saône and Rhône valley from the period of the Molasse with *Nassa Michaudi* and *Pecten benedictus* to that of the Erratic Drift of Malafretaz in Northern Bresse and of the Dombes Plateau. Gives a mass of local details. G. A. L.

——. L'âge des civilizations d'après les alluvions de la Saône. [Date of the Civilizations according to the Alluvia of the Saône.] *Bull. Soc. Géol. France*, ser. 3, t. vi. pp. 148–151.

Concludes that the first appearance of Neolithic civilization in the Mâcon region took place in the 23rd century B.C., and that the age of Bronze civilization was brought there in the 6th century B.C. Asserts that in Neolithic times it rained twice as much as in the Bronze Period, and a little more in the latter than now. G. A. L.

Tavernier, —. Le Vallon des Vuavres. [The Vuavres Valley (Chablais)]. *Revue Savoisienne*, p. 18.

Describes the anthracite beds at Tanninge.

Teller, F. Geologische Mittheilungen aus der Oetzthaler-Gruppe. [Geology of the Oetzthal Group.] *Verh. k.-k. geol. Reichs.* pp. 64–66.

Account of the geology shown in the Solden St. Leonhard sheet. See *post*, MAPS.

——. Ueber die Aufnahmen im unteren Vintschgau und im Iffinggebiete bei Meran. [Surveys in Lower Vintschgau and the Iffing Country near Meran.] *Verh. k.-k. geol. Reichs.* pp. 392–396.

Report on the progress of the Geological Survey of the region.

——. Der geologischer Bau der Insel Eubœa. [Geological Structure of the Island of Eubœa.] 4to. 3 pls. *Vienna.*

Thenius, Dr. G. Untersuchung der Braunkohle und des feuerfesten Thones von Wildshut in Oberösterreich hinsichtlich ihrer chemischen Zusammensetzung und Verwendung zu industriellen Zwecken.

[The Brown Coal and Fire Clay of Wildshut, Upper Austria, with regard to their Chemical Composition and Industrial Value.] *Verh. k.-k. geol. Reichs.* pp. 54–57.

Gives a measured section of the beds, with analyses of the coal.

Thomassen, T. Ch. Geologiske Undersögelser paa Folgefons Halvö. [Geological Notes on the Folgefon Peninsula, Norway.] *Nyt Mag. Nat.* Bd. 24, h. 3, pp. 273–288, sketch map.

Thoroddsen, Th. Et Besög 1876 ved Myvatn paa Island. [Visit to Lake Myvatn, Iceland.] *Dansk. Geogr. Selsk. Tijdskr.* Bd. ii. pp. 116–120.

Notes on great volcanic territories.

Tietze, Dr. E. Die Ansichten Emanuël Kayser's über die hercynische Fauna und die Grenze zwischen Silur und Devon. [Kayser's Views on the Hercynian Fauna, and on the Boundary between Silurian and Devonian.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 743–757.

A critique of Kayser's memoir, "Die Fauna der ältesten Devonablagerungen des Harzes." See *post*, under INVERTEBRATA.

——. Zur Frage über das Alter der Lias-Kohlen von Bersaska. [Age of the Lias-Coal of Bersaska.] *Verh. k.-k. geol. Reichs.* pp. 69–79.

Discusses the question fully, insisting upon the L. Lias age of the Coal, as against Dr. v. Hantken, who regards it as M. Lias.

——. Die Funde Nehring's im Diluvium bei Wolfenbüttel und deren Bedeutung für die Theorien über Lössbildung. [Nehring's Discoveries in the Drift near Wolfenbüttel, and their bearing on the Theories of the Origin of the Loess.] *Verh. k.-k. geol. Reichs.* pp. 113–119. See **Nehring**, p. 95.

——. Ueber das Vorkommen von Eiszeit-Spuren in den Ostkarparthen. [Traces of the Ice-Age in the E. Carpathians.] *Verh. k.-k. geol. Reichs.* pp. 142–146.

Refers to Messrs. Jack and Horne's paper (see p. 138), and shows that traces of the Glacial Period do not occupy the extent of ground stated by those authors; but adds that such traces do exist on a relatively small scale, and were first described by **Herr Paul** and the author. G. A. L.

Tirloir, A. Notes complémentaires sur les gîtes métallifères du Dauphiné. [Metalliferous Deposits of Dauphiné.] *Bull. Soc. Sci. Nat. Nîmes*, nos. 11, 12.

Törnebohm, A. E. Om urformationens geognosi inom medlersta Sverige. [Geognosy of the Primitive Formation in Central Sweden.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 95–106.

Gives notes as to the relative position of the primitive rocks, and a schematic review of the age and superposition of those as well as of the eruptive rocks. E. E.

Törnebohm, A. E. Om Bergbyggnaden inom de sydligare svenska lappmarkerna. [Geology of the S. part of the Swedish Lap Districts.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 166–170.

Some notes on the rocks (granite, quartzite, mica-schist, and alum-schist) and their order of superposition.

——. Om Granholmen i Mälaren. [The Island of Granholm, in Lake Mälar, Sweden.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 187–190.

Notes on amygdaloidal diabase, probably occurring as a bed in sandstone.

——. Beskrifning till Geologisk Atlas öfver Dannemora Grufvor. [Description to Geological Atlas of the Iron-ore Mines at Dannemora, Sweden.] Pp. x, 85; 2 plates (plans). 8vo. *Stockholm.* See *post*, under Maps.

Gives a sketch of the geological conditions of the district, and an account of the rocks and the ore as to their distribution and petrographical composition. The southern, middle, and northern fields of the mine-district are described; the stratigraphical conditions, dykes, faults, and the probable extension of the iron-ore noticed. E. E.

Tombeck, —. Sur la position vraie de la zône à *Ammonites tenuilobatus* dans la Haute-Marne et ailleurs. [True Position of the *A. tenuilobatus* Zone in Haute-Marne and elsewhere.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 6–13.

In Haute-Marne the zone in question is in two parts, and is shown to be Corallian. The L. Corallian of the district with all its various facies must be regarded as but an episode within the *A.-tenuilobatus* zone. Southern geologists refer the zone to the Argovian, those of Germany and Switzerland to the Sequanian. These views are reconciled. In the discussion **MM. Buvignier** and **Pellat** add details (pp. 13–17). G. A. L.

——. Leçons élémentaires de géologie à l'usage des écoles primaires. [Elements of Geology for Primary Schools.] *Vassy.*

An elementary book dealing specially with the geological phenomena in the Arrondissement of Vassy, Haut-Marne.

Torcapel, —. Note sur la Géologie de la ligne d'Alais au Pouzin. [Geology of the Railway between Alais and Pouzin.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 104–107.

Abstract of a memoir published in 1877. See p. 156.

Toula, Franz. Ueber Devon-Fossilien aus dem Eisenberger Comitate. [Devonian Fossils from Eisenberg County.] *Verh. k.-k. geol. Reichs.* pp. 47–52.

The presence of Devonian rocks in this new locality (the only one previously known in the Austrian Alps being Graz) is proved by fossils collected by Dr. Hoffmann. The Palæozoic rocks of Eisenberg occur as detached islands surrounded by Congeria Beds. G. A. L.

Toula, Franz. Geologische Untersuchungen im westlichen Theile des Balkan und in den angrenzenden Gebieten. [Geology of the W. Balkan.] *Sitz. k. Ak. Wiss. Wien*, Bd. lxxvii. pp. 247–317; 12 pls. (2 maps, 4 of sections, 6 of fossils). Continuation of the series noticed in the Geological Record for 1876, p. 117; for 1877, p. 99; and *post*, in Supplement.

Part 5. Geological Section over the Berkovica Balkan from Sofia to Berkovac, pp. 247–269. Describes rocks and fossils (Tithonian?, M. Lias, Trias, Dyas, Carboniferous, Igneous, and Metamorphic.—Part 6. From Berkovac to Vraca, pp. 269–281. Describes Palæozoic and Cretaceous rocks and the following new Cretaceous fossils—*Ostrea Vracaensis*, *Arcopagia? gracilis*, *Hinnites inquilinus*, *Caprotina spiralis*, and *Holocystis tenuis*.—Part 7. From Vraca through the Isker Gorge to Sofia, pp. 282–314. Cretaceous, Neocomian, Carboniferous, and Igneous rocks and fossils described (n. sp. not named). W. H. D.

Tournouër, R. Note complémentaire sur les Tufs quaternaires de La Celle, près Moret (Seine-et-Marne). [Quaternary Tuffs of La Celle near Moret, in Seine-et-Marne.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 646–671, pls. xii., xiii.; 2 figures in text.

The beds in question are between the "Diluvium Gris" and the recent alluvia in age. They consist of 8 metres of interbedded tuffs and marls, the former containing many plant-remains, &c., and the latter bones and shells. The fossil mollusks are noted, and the more characteristic forms figured, *Helix* (*Eudota*) *Chouquetiana* being described as a new species. A map and sections are given. G. A. L.

——. Observations sur les terrains tertiaires de la Bresse. [Bressan Tertiaries.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 732–734.

A summary of the chief results to be shortly published in full, to accompany Tardy's paper (see p. 113).

Tribolet, Maurice de. Note relative à des traces de l'époque glaciaire en Bretagne. [Traces of the Glacial Epoch in Brittany.] *Bull. Soc. Géol. France*, sér. 3, t. vi. p. 198, and (slightly differently worded) *Ann. Soc. Géol. Nord*, t. v. pp. 100–105.

Notes the occurrence on Bréhat Island, and on the road between Lannion and Plouaret, of deposits like the Loess of Switzerland and Germany, with calcareous concretions and land-shells. G. A. L.

——. Note sur les gisements d'asphalte d'Hanovre, comparés à ceux du Val de Travers. [Hanoverian Asphalt-Deposits.] *Bull. Soc. Sci. Nat. Neuchâtel*, t. xi. cah. 2, pp. 266–271.

The site is about 2 miles from Hanover. The rocks are U. Jurassic

(Pterocerian, Virgulian, Portlandian), the limestone of the first being most productive of asphalt. W. H. D.

Tribolet, Dr. M. F. de. Sur l'âge stratigraphique de la zône gypsifère alpine à Bex—Lac de Thoune. [Age of the Bex Gypsum.] *Vierteljahrsschr. nat. Ges. Zürich,* Bd. xxiii. p. 160.

The gypsum is interbedded with the Flysch.

Tromelin, G. de. Etude des Terrains paléozoiques de la Basse-Normandie, particulièrement dans les départements de l'Orne et du Calvados. [Palæozoic Rocks of Lower Normandy, especially of the Orne and Calvados.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 493–501. + Bull. Soc. Linn. Norm. Sér. 3, t. II. p. 6.

The rocks described are:—Laurentian (mica-schist and gneiss), Cambrian (Slates), Silurian (grits and schists, with and without fossils, in 8 divisions, representing the 2nd and 3rd Faunas), Devonian (Lower, with *Pleurodictyum problematicum*), Carboniferous Limestone (to which the limestones of Bahais, La Meauffe, Tessy, &c., formerly regarded as Cambrian, are referred), Coal Measures (Upper probably, of Littry), and ? Permian. Lists of the chief fossils are given. G. A. L.

Truchot, Prof. —. De la fertilité des terres volcaniques. [Fertility of Volcanic Soils.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 977–982.

Refers specially to the volcanic soils of Auvergne, which are in a marked degree more fertile than the adjoining granitic rocks. This fertility is due to the presence of phosphoric acid, rendered more easily soluble and capable of assimilation by association with lime. Tables of analyses are given. G. A. L.

Trutat, E. Les moraines de l'Arboust, ancien glacier d'Oo. [The Arboust Moraines, the ancient Oo Glacier.] *Ann. Club alp. Franç.* ann. 4, p. 449. See the following.

Trutat, [E.], and — Gourdon. Sur une carte des blocs erratiques de la vallée de l'Arboust, ancien glacier d'Oo (environs de Luchon, Haute-Garonne). [On a Map of the Erratic Blocks of the Arboust Valley, Ancient Oo Glacier, near Luchon, Haut-Garonne.] *Compt. Rend.* t. lxxxvi. pp. 752–754.

The blocks are chiefly granitic, some being limestone. The largest is 96 cubic metres. The granite blocks come from the ridges of the Oo, the others from the flanks of Pic Quariat. G. A. L.

Uhlig, Victor. Beiträge zur Kenntniss der Juraformation in den karpatischen Klippen. [Jurassic Rocks in the Carpathians.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 641–658, pls. xvi. & xvii.

The Jurassic divisions found in the Carpathians are equivalent to the U. and M. Dogger, the Kelloway Group, the Oxfordian, the Kimmeridgian, and the L. Tithonian. They occur in five well-marked series, with slight local variations in the Stankówka and in the Babieczówka.

The fossils are noted and described, the new species being—*Discohelix Petersi*, *Litoceras* cf. *Adeloides*, Kud., *Harpoceras penninicum*, *Discohelix Neumayri*, *Amberleya carpatica*, *Neritopsis Haueri*, *Chrysostoma Sturi*, *Ziziphinus scopulorum*, *Rhynchonella penninica*, *R. Kaminskii*, *Cosmoceras subpretiosum*. G. A. L.

Urrutia, P. L. Datos Geológico-Mineros de la Provincia de Logroño. [Geology and Mineralogy of Logroño.] *Bol. Com. map. geol. Españ.* t. v. pp. 315–320.

Silurian (with ores of lead, copper, and iron), Carboniferous, Liassic, Cretaceous, and Eocene (with sulphate of soda) are noted.

Vacek, M. Die Umgebung von Roveredo in Südtirol. [The Country round Roveredo, in S. Tyrol.] *Verh. k.-k. geol. Reichs.* pp. 341–345.

Geological notes sent from the field.

Vallée Poussin, C. de la. [Large *Conocardium Hibernicum*? from Soignies.] *Ann. Soc. Géol. Belg.* t. v. p. xci.

Note of occurrence.

——. [Nodules S. of Pepinster Station.] *Ibid.* pp. xcix, c.

In red schists. The nodules resemble some of the English Cornstones. Their dissolution is the reason of the cellular structure of some L. Devonian schists. They contain barytine inside. W. W.

Vanden Broeck, Ernest. Sur les formations tertiaires d'Anvers. [Tertiary Beds of Antwerp.] *Ann. Soc. Géol. Belg.* t. v. pp. cxvii–cxix.

Describes the Pliocene and Quaternary beds of the old southern citadel. Between the Campinian sands and the underlying glauconiferous sands is a line of denudation, shown by a thin remanié bed with broken shells from more recent Pliocene beds, resting on a hardened surface of the lower sands. W. W.

——. Esquisse Géologique et Paléontologique des Dépôts Pliocènes des Environs d'Anvers. [Pliocene Geology of Antwerp.] Fasc. ii. pp. 102–293, map. *Ann. Soc. Mal. Belg.* t. ix. pp. 184–375, pl. iv. Summary (1877) by **P. Cogels** in t. xi. *Bull.* pp. xx–xxix.

Conclusion of memoir noticed in the GEOLOGICAL RECORD for 1876, p. 119. Deals with the Middle and Upper Sands, giving detailed lists of the fossils. These divisions are unconformable, as in England, and their faunas are distinct. *Terebratula grandis* is shown to be in place in the Middle as well as in the Lower Sands. The climatal and geographical variations of W. Europe during the Pliocene epoch are fully described. A table of the Belgian beds from the M. Oligocene upwards is given. Pp. 267–290 contain the bibliography of the subject, notes of errors and additions to lists, and explanation of the topography of the district. W. H. D.

Vanden Broeck, Ernest. [On Fossils from Limburg.] *Proc.-verb. Soc. Mal. Belg.* t. vii. pp. lxvii, lxviii.
Remarks on the fluvio-marine zone and on the Quaternary beds.

——. [Continuation of Stratigraphical and Palæontological work in Limburg.] *Proc.-verb. Soc. Mal. Belg.* t. vii. pp. lxxii–lxxvi.
The Quaternary is divisible into 5 beds.

Vanden Broeck, Ernest, and **Paul Cogels.** Observations sur les Couches Quaternaires et Pliocènes de Merxem près d'Anvers. [Quaternary and Pliocene Beds of Merxem, Antwerp.] *Ann. Soc. Mal. Belg.* t. xii. pp. lxviii–lxxiv.
Give stratigraphical details with lists of fossils, showing that correlation of beds by colour is incorrect, and that Dumont's Scaldisian system contains 2 distinct horizons. W. H. D.

Varambaux, E. Géologie du Canton d'Eu. [Geology of the Canton of Eu.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 526–529.
A lithological description from an engineering and hydrographic point of view. At one spot near the hamlet of Montagne the author has found amber of good quality and of several varieties in abundance; it lies mixed with flints in a lignitiferous and salt clay about 20 inches from the surface. G. A. L.

Vasselot de Régné, —. Notice sur les dunes de la Coubre (Charente-Inférieure). [The Sand-dunes of La Coubre, Charente-Inférieure.] Published by the Ministry of Agriculture and Commerce for the 1878 Exhibition. Pp. 78, map. 4to. *Paris.* Sand/

Vasseur, G. Réponse à M. Dufour. [Reply to M. Dufour.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 63–66.
Refuses to correlate the Campbon shell-beds with the *Cerithium giganteum* limestones of Arthon, these horizons being, respectively, the top and bottom of the Orbitolite Limestone. (See **Dufour**, p. 62.) G. A. L.

——. Nouveau gisement fossilifère de l'âge du Calcaire grossier découvert au Bois-Gouët, près Saffré (Loire-Inférieure). [New Fossiliferous Deposit of "Calcaire Grossier" age in the Gouët Wood, near Saffré, Loire-Inférieure.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 81–83.
Note of occurrence.

——. Sur les terrains Tertiaires de la Bretagne. [Tertiaries of Brittany.] *Compt. Rend.* t. lxxxvii. pp. 1048–1850, woodcuts (sections).
Sections from Saffré to Bois-Gouët, near Saffré, and at La Chausserie.

Verri, Antonio. Sulla Cronologia dei Vulcani Tirrheni, e sulla Idrografia della Val di Chiana anteriormente al Periodo Pliocenico. [Chronology of Tuscan Volcanoes and Pre-Pliocene Hydrography of the Val di Chiana.] *Rend. R. Ist. Lomb.* ser. 2, vol. xi. pp. 144–163, folding section.

Believes that the Val di Chiana was subjected to a movement of depression in the Miocene period, and that in the Pliocene a movement of elevation commenced, which is still in progress. E. S. D.

Verri, Antonio. Avvenimenti nell' interno del bacino del Tevere antico durante e dopo il periodo pliocenico. [Changes in the Basin of the Tiber during and after the Pliocene age.] *Atti Soc. Ital. Sci. Nat.* vol. xxi.

Vézian, — Les cailloux calcaires du terrain dubisien. [Limestone Pebbles of the Dubisian.] *Bull. Club alp. Franç. Jura,* p. 51.

Black limestone pebbles occur in the Kimeridgian, Portlandian, Purbeckian, and L. Cretaceous.

Villa, Antonio and **G. B.** Cenni geologici sul territorio dell' antico distretto di Oggiono. [Geology of the Oggiono District.] *Politecnico,* anno xxvi. pp. 15, geol. map.

Describes the stratigraphy of the district, and gives lists of Liassic and Cretaceous fossils.

Vincent, G., and **A. Rutot.** Note sur l'absence du système Diestien aux environs de Bruxelles. [Absence of the Diestian near Brussels.] *Ann. Soc. Géol. Belg.* t. v. pp. 56–66. See also pp. xcvii, xcviii.

The supposed Diestian near Wemmel is merely a vertical continuation of the Eocene, without a dividing line, there being a passage upwards from fine to coarse sand. Certain ferruginous bands are only the result of the decomposition of glauconite by atmospheric action, and have no stratigraphical value. In this part, N. of Brussels, the L. Tongrian and L. Rupelian of Dumont are also only parts of the Eocene, a conclusion confirmed by palæontology. In the Laekenian there are but two marked lines of separation, one at the base and the other at the junction of the Wemmel sands with the L. Laekenian. The U. Laekenian is correlated with the Barton and U. Bagshot Beds. W. W.

——, ——. Note sur le relevé des sondages entrepris par M. van Ertborn dans le Brabant. [Wells in Brabant.] *Ann. Soc. Géol. Belg.* t. v. pp. 67–99.

Most of these are between Brussels, Vilvorde, and Louvain, and chiefly in L. Tertiary beds. The geological conclusions from them are stated, and details of 25 wells are given (pp. 77–99). W. W.

——, ——. Quelques nouvelles observations relatives au Système Wemmelien. [Further Notes on the Wemmelian System.] *Proc.-verb. Soc. Mal. Belg.* t. vii. pp. lxii–lxvii.

Supplementary to the paper on the absence of the Diestian (see above), giving the results of later observations.

Vincent, G., and A. Rutot. Note sur quelques observations géologiques et paléontologiques faites aux environs de Louvain. [Geological and Palæontological Notes on the Louvain District.]. *Proc.-verb. Soc. Mal. Belg.* t. vii. pp. lxxxvi–xci.

Recognize the Wemmelian. Lists of fossils given.

Vuillemin, E. Les Mines de Houille d'Aniche. [Aniche Coal Mines.] Pp. iv, 326, 69. 8vo. *Paris.* Plates, 4to.

Gives a history of the mines, pp. 5–152; Gisements, 153–172; Production, 263–267; List of Sinkings, 299–323. Plates ii., viii., ix. are maps, and show the position of sinkings; vii., xiii., xiv. are sections.
W. W.

Wagner, C. J. Der Sonnstein-Tunnel aus Traun-See. [The Sonnstein Tunnel.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 205–212, pl. vi. (geol. map) and section in text.

Describes the geology of the district, many points of details in which have been cleared up by the tunnel. The rocks between Ebensee and Traunkirchen on the W. shore of the lake (where the tunnel is situated) consist of Triassic dolerites and Jurassic limestones and marls. Readings of temperature taken in the various rocks during the excavation are given.
G. A. L.

——. Geologische Skizze des Hausruck-Gebirges. [Geological Sketch of the Hausruck Mountains.] *Verh. k.-k. geol. Reichs.* pp. 29–34; 2 figs. in text.

The rocks are divisible into three groups—Upper or loose Drift deposits Series, a Middle or Lignitiferous Group, and a lower Clay and Sand Group (=the Schlier). The Lignites were denuded before the deposition of the Drift.
G. A. L.

Wahlgren, Fr. Om de vid utvidgningen af Ystads hamn åren 1868–1869 funne däggdjursben. [Bones found at Ystad (Scania, Sweden) in enlarging the Harbour.] *K. Fys. Sällsk. Lund Minneskr.* no. vi. pp. 1–13. 4to. *Lund.*

With the exception of a few fragments of fox and roe, all the bones belong to domestic creatures, as oxen, dog, horse, swine, sheep, and goat.

Wallon, E. Explorations nouvelles dans les montagnes du Haut-Aragon (Pyrénées espagnoles). [Recent Explorations in Upper Aragon.] *Ann. Club alp. Franç.* ann. 4. p. 100.

Contains geological information.

Watebled, —. [New Shell-bed at Lime.] *Act. Soc. Linn. Bordeaux,* vol. xxxii. p. lxi.

The fossils are the same as those found higher up (*Cardita Jouanneti* bed).

Waters, A. W. Dr. Carl Mayer on the Italian Tertiaries. *Geol. Mag.* n. s. dec. ii. vol. v. pp. 189, 190.

Draws attention to a paper in *Boll. R. Com. geol. Ital.* of 1877 and *Bull. Soc. Géol. France.*

Weiss, —. [Plant-beds in Hungary and Tyrol.] *N. Jahrb.* Heft ii. pp. 179, 180.

A controversial letter.

Wiik, Dr. F. J. Die geologischen Verhältnisse Finnlands. [Geology of Finland.] *Verh. k.-k. geol. Reichs.* pp. 85–89.

The primitive, metamorphic, and eruptive rocks of Finland can be arranged in two groups, both petrologically and by unconformity. The oldest is a gneissose granite, "Gneissgranit" (=Lagergranit of Gümbel). The younger consists of clearly foliated granite (=Stockgranit of Gümbel). The gneiss formation is Laurentian. Both it and the younger rocks are subdivided into a number of stages by means of petrographical characteristics. G. A. L.

Winkler, Dr. T. C. Considérations géologiques sur l'origine du Zand-Diluvium, du Sable Campinien et des Dunes maritimes des Pays-Bas. [Origin of Dutch Drifts.] *Arch. Mus. Teyler*, t. v. fasc. 1, p. 64, geol. map.

Drift of the Netherlands in general. Northern Drift, with list of the chief fossils (derived). Eastern Drift. Southern Drift. Intermixed Drift. Remanié Drift. Maritime Dunes. Concludes that the sand-drift of Staring should be called Remanié Drift, and that it was formed by the sea; that the Remanié Drift is analogous to the Campinian sand of Belgium; that the Southern Drift in analogous to the pebbly Drift of Dewalque, and to various divisions of other authors; that the Campinian beds should be separated into two stages, a lower fresh-water and an upper marine; that the Campinian sand is newer than the Hesbayan loam; that the sand of the dunes is identical with the Campinian sand; that the moving sand of the dunes was formed after the Drift; and that the alluvial beds are newer than the dunes.

W. W.

——. Sur l'origine des dunes maritimes des Pays-Bas. [Origin of the Maritime Dunes of Holland.] *Arch. Néerl.* t. xiii. p. 418–427, pl. vi. (geol. map).

An earlier and shorter version of the above.

Zareczny, Dr. St. O srednich warstwach krédowych w krakowskim okreg okregu/ [M. Cretaceous Beds of Cracow.] *Sprawozd. Kom. Fiz. Krakow*, t. 12, pp. 176–246, pls. iv.–viii. (fossils).

Describes the Cenomanian, Turonian, and Senonian of the districts of Podgorze, Zakrzówek, Sudól, Rudawa, Witkowice, Trojanowice and Giebultow, giving analysis of marl from Sudól by **J. Krzyzanowsky**, and describing many fossils, the following being new species—*Lamna striola*, *L. striatella*, *Serpula annulifera*, *S. planulata*, *Galerites elliptica*, *Caratomus althe*, *C. affinis*, *Spongia sudolica*. W. H. D.

Zezi, P. Cenno intorno ai Lavori del Comitato Geologico nel 1877. [Work of the Geological Survey of Italy in 1877.] *Bol. R. Com. geol. Ital.* vol. ix. pp. 3–9.

Zigno, Baron A. de. Sur les Siréniens fossiles de l'Italie. [Fossil Sirenia of Italy.] *Bull. Soc. Géol. France,* sér. 3, t. vi. pp. 66–70.

Gives a tabular view of the distribution of fossil Sirenia found in Italy. There are recorded 4 Pliocene, 1 Miocene, and 3 Eocene species. G. A. L.

Zsigmondy, W. Der artesischen Brunnen im Stadtwäldchen zu Budapest. [Artesian Wells near Budapest.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 659–742, pls. xviii.–xxi., and 5 tables.

Comprises an account of the geology of the country round Budapest, and with special reference to thermal waters, technical description of borings and boring apparatus, with observations of temperature at various depths, detailed measured sections, and lists of fossils, chiefly Foraminifera. G. A. L.

Mining and Metallurgy at the Paris Exhibition. *Engineer,* vol. xlvi. pp. 1, 19, 37, 71, 89, 141, 217, 366, 457.

A detailed list, with geological and statistical notes, of maps, models, and specimens illustrating the structure, mode of working, &c. of coal and metal mining districts in France, Scandinavia, Denmark, and Belgium. F. B. E.

See also:—

Crié, L. Tertiaries of Mans and Angers: *post,* under PLANTS.

Dewalque, Prof. Belgian Devonian, p. 9.

Hunt, Dr. T. S. European Cambrian rocks: *post,* under AMERICA.

Kjerulf, T. Geology of S. Norway: *post,* under MISCELLANEOUS.

Lundgren, B. Rhætic Coal Series, Scania: *post,* INVERTEBRATA.

Nathorst, A. G. Coal-bearing Beds, Scania: *post,* under PLANTS. (2 entries.)

Pirona, G. A. Jurassic of Mt. Cavallo, Friuli: *post,* INVERTEBRATA.

SUPPLEMENT FOR 1874–1877.

Abich, Hermann. Mittheilungen aus dem Kaukasus. [Notes from the Caucasus.] *Verh. k.-k. geol. Reichs.* 1877, pp. 29–35.

Notes on metamorphic, igneous, Cretaceous, Eocene, Pliocene, and Sarmatian beds.

Aichhorn, —, and — Plankensteiner. Das wilde Loch auf der Grebenzen-Alpe, und die darin aufgefundenen thierischen Ueberreste. [The Wilde Cave in the Grebenz Alps and its Fossil Fauna.] *Mitth. nat. Ver. Steiermark*, 1875, plate.

Andrä, Prof. [Phosphatic Concretions from Waldböckelheim.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Sitz.* p. 121. [1876.]

Anon. Le Tunnel sous la Manche. Tunnel du Saint Gothard. Les mines du Caucase. Mines de fer et de houille en Turquie. Le percement de Mont-Blanc. *Moniteur industriel Belge*, 1875.

Channel Tunnel, pp. 342, 350, 362, 383, 447, 558; St. Gothard Tunnel, p. 348; Caucasian Mines, p. 367; Turkish Coal and Iron, p. 418; Mt. Blanc Tunnel, p. 532.

——. Chemin de fer du Saint Gothard. Tunnel entre Calais et Douvres. Tunnel du Saint Gothard. Nouveaux Gisements de Nickel. Mines de nickel en Espagne. Sur les relations existant entre la Composition et le Gisement des Charbons du Bassin de Liége. *Moniteur industriel Belge*, 1876.

St. Gothard Railway, pp. 14, 45, 92, 125, 133, 169, 205, 218, 244, 270, 298, 328. Channel Tunnel, pp. 58, 473. St. Gothard Tunnel, pp. 59, 60, 77, 107, 123-125, 133, 149, 183, 204, 205, 298. New Nickel Deposits, pp. 151, 340. Spanish Nickel Mines, p. 493. Relation of Composition and Locality in Liége coals, p. 503. W. H. D.

——. Sur les gisements et les exploitations des phosphates de chaux fossiles dans les départements des Ardennes et de la Meuse. [Phosphate Beds in N. France and Belgium.] *Bull. Soc. Encour.* sér. 3, t. iii. no. 30. [1876.]

——. The Coal-fields of Spain. *London Iron Trades Exchange*, vol. xxi. p. 328. [1877.]

——. Excursions. *Compt. Rend. Assoc. Franç*, 5 sess. p. 1097. [1877.]

Issoire, geological notes, pp. 1097, 1098. l'Ardoisière, p. 1108. Perrier, p. 1110. The Cantal, p. 1124. Mt. Dore and La Bourboule, p. 1126. Puy-en-Velay, p. 1141.

——. Les Gisements de Charbon du Portugal. [Portuguese Coals.] *Moniteur industriel Belge*, 1877, pp. 105, 146.

Arcelin, A. Les formations quaternaires aux environs de Mâcon; la faune et l'ancienneté de l'Homme. [Quaternary, Mâcon.] *Mat. Hist. Homme,* sér. 2, t. viii. p. 105. [1877.]

——. Les formations tertiaires et quaternaires de Mâcon. [Tertiary and Quaternary of Mâcon.] 3 pls. 8vo. *Paris,* 1877.

Arnaud, H. Mémoire sur le Terrain Crétacé du Sud-Ouest de la France. [Cretaceous of S.W. France.] *Mém. Soc. Géol. France,* sér. 2, t. x. pp. 110, pls. xxi.–xxviii. (sections and fossils) and 3 folding tables (detailed sections). [1875.]

The divisions recognized are Cenomanian, Ligerian, Angoumian, Provencian, L. Senonian (Coniacian and Santonian), Campanian, and Dordonian. The lithological and palæontological characters of each are described, 27 stratigraphical divisions being recognized, and increased to 29 in an Appendix. The range of the larger invertebrata through these subdivisions is shown by tables. The following new species are described and figured:—*Sphærulites patera, Terebratula lenticularis, T. inversa, Waldheimia subtamarindus, Rhynchonella globata, R. rudis, R. Cotteaui, R. tenuistriata, Conoclypeus conicus, C. perovalis, C. orbicularis, Pyrina flava, P. insularis.* The principal faults are traced.

W. H. D.

Bachmann, Prof. I. [The Sidelhorn.] *Jahrb. Schweiz. Alpenclub,* Jahrg. ix. p. 540. [1874.]

Notes amethyst crystals in gneiss.

——. Neuere Beobachtungen über die Bodenverhältnisse Berns. [Further Notes on the Bernese Rocks.] *Mitth. nat. Ges. Bern,* 1876, p. 105.

Describes the Molasse and Glacial Drift in a new exposure.

——. Ueber ein neu errichtetes erratisches Monument auf der grossen Schanze in Bern. [New Erratic Monument on the great Bastion, Berne.] *Mitth. nat. Ges. Bern,* 1876, p. 122.

Notes the boulders from the old moraine of the Aar glacier, used for this monument, and others in the Berne Museum.

——. Die erhaltene Riesentopf am Längerberg. [Giant's Kettle on the Langerberg.] *Mitth. nat. Ges. Bern,* 1877.

Describes the kettle and the Drift of the district.

Baltzer, Dr. A. Ueber die jüngsten Eruptionen auf der Insel Vulcano und ihre Producte. [Latest Eruption of the Island of Vulcano, and its Products.] *Vierteljahrsschrift nat. Ges. Zürich,* Bd. xix. [1874.] See GEOLOGICAL RECORD for 1875, p. 207.

——. Der Erdschlüpf von Böttstein. [Landslip at Böttstein.] *Neue Alpenpost,* Bd. iii. p. 349. [1876.]

Describes and figures an important landslip on the Aar.

Banning, Dr. —. [Vertebrata from Pebble Beds, Rangirbahnhof Porta.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Corr.-Blatt.* p. 45. [1875.]

A list of bones.

Barrois, Dr. Charles. Mémoire sur l'aachénien, etc. *Ann. Soc. Géol. Nord*, t. ii. p. 80. [1875.]

Notice of paper published in full elsewhere. (See GEOLOGICAL RECORD for 1875, p. 49.) Discussion by **Prof. Gosselet,** pp. 80, 81.

Basevi, —. Le miniere di ferro dell' isola dell' Elba. [Iron Mines of Elba.] *Politechnico*, July 1876.

Basile, G. L'elefante fossile nel terreno vulcanico dell' Etna. [Fossil Elephant in Etna Tuff.] *Atti Ac. Gioen. Sci. Nat.* ser. 3, t. xi. [1877.]

Belt, Thomas. The Steppes of Southern Russia. *Quart. Journ. Geol. Soc.* vol. xxxiii. pp. 843–862. [1877.]

Detailed description of many sections of Miocene (Sarmatian) and Diluvial beds (loess). The latter are referred to a vast freshwater lake, in which icebergs dropped blocks of northern rocks. W. H. D.

Benecke, E. W. Ueber die Trias in Elsass-Lothringen und Luxemburg. [Trias of Alsace-Lorraine and Luxembourg.] *Abh. geol. Specialkarte Elsass-Lothringen*, Bd. i. Heft 4, pp. 491–829, pls. i.–vii. (sections), and 2 geol. maps. [1877.]

Introductory and historical. Bunter, Muschelkalk, and Keuper of Alsace-Lorraine. Luxembourg Trias. General Remarks. Elie de Beaumont's theory of the Vosges elevation. Details of sections and lists of fossils throughout. W. W.

Berendt, Dr. G. Die Umgegend von Berlin Allgemeine Erläuterungen zur geognostisch-agronomischen Karte derselben. I. Die Nordwesten Berlins. [Geology of the N.W. part of the Berlin District.] *Abh. geol. Specialkarte Preuss.* Bd. ii. Heft 3, pp. xvi, 265–407, pl. (map), and 10 woodcuts. [1877.]

Orography, hydrography, details of Drift and Alluvium, agricultural and economic geology, with analyses by **Drs. E. Laufer, L. Dulk,** and **F. Wahnschaffe,** and **E. Schulz.** Peat, amber, tripoli, &c. are found. W. H. D.

Berthelin, G. Liste des Mollusques fossiles du Gault de Morteaux (Doubs). [List of Mollusca of the Morteaux Gault.] *Mém. Soc. Emul. Doubs*, sér. 4, t. ix. p. 60. [1874.]

70 species recorded.

Bittner, Dr. A. Die Tertiärbildungen von Bassano und Schio. [Tertiary Rocks of Bassano and Schio.] *Verh. k.-k. geol. Reichs.* 1877, pp. 207–210. Translated into Italian in *Boll. R. Com. geol. Ital.* vol. viii. pp. 425–429. [1877.]

Describes Eocene beds.

Bittner, Dr. A. Das Alpengebiet zwischen Vicenza und Verona [The Alps between Vicenza and Verona.] *Verh. k.-k. geol. Reichs.* 1877, pp. 226–231. Translated into Italian in *Boll. R. Com. geol. Ital.* vol. viii. pp. 433–439. [1877.]

Notes on Liassic, Jurassic, and Cretaceous rocks.

Böckh, J. Die geologischen und Wasser-Verhältnisse der Umgebung von Fünfkirchen. [Geology and Hydrography of Fünfkirchen.] *Mitth. Jahrb. kön. ung. geol. Anst.* Bd. iv. Heft 4, p. 127; map. [1876 or 1877.]

Boltze, Hermann. Ueber die Art und Weise des Vorkommens von Schwälkohlen in der Prov. Sachsen. [Quality and Mode of Occurrence of Pyropissite in Saxony.] *Zeitsch. gesammt. Nat.* Bd. xlix. pp. 173–214, pl. 5. [1877.]

Gives analyses, sections, and list of plants of the lignite beds (Oligocene). See also **Grotowsky**, noticed in Geological Record for 1876, p. 70. W. H. D.

Boutillier, L. Compte-rendu de l'excursion de Beauvais (rapport géologique). *Bull. Soc. Sci. nat. Rouen*, sér. 2, ann. 12. [1877.]

Bréton, L. Note sur Auchy-au-Bois. [Auchy-au-Bois Coalfields.] *Compt. Rend. Soc. Ind. Min. St. Etienne*, p. 12. [1877.]

Brögger, W. C. Om Trondhjemsfeltets midlere Afdeling mellem Guldalen og Meldalen. [Middle Part of the Trondhjem Series between Guldal and Meldal, Norway.] *Forh. Vid.-Selsk. Christiania*, 1877, no. 2, pp. 1–28; 4 pls. (geological sketch map, sections, and fossils).

The rocks of the district (limestone, conglomerate, breccia, schist, clayslate, and sandstone), their occurrence, order of superposition, and fossils are described. New species of *Trilobites, Pentamerus,* and *Leptæna.* E. E.

Cartier, R. [Langenbrück, Jura Mts.] *Mitth. nat. Ges. Basel*, 1874.

The district comprises all the formations from the Muschelkalk to to the Kimmeridgian: the principal fossils are noted, and a list of bones from siderolitic deposits is given. (From E. Favre's *Revue.*) W. H. D.

Caviezel, —. Das Ober-Engadin. [The Upper Engadine (Guidebook.)] [1876.]

Contains a sketch of the geology from Theobald's works.

Cazin, —. Les fontaines ardentes de Châtillon (Haute-Savoie). [Burning Springs of Châtillon.] *Bull. Club alp. Franç.* ann. iii. p. 335. [1877.]

These springs evolve carburetted hydrogen, which is used for culinary purposes.

Chambrun de Rosemont, — de. Embouchures des Deltas miocènes et pliocènes du Var. [Miocene and Pliocene Deltas of the Var.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 416, 417. [1877.]
Abstract, with discussion.

Choffat, P. Age du Gisement fossilifère des Sèches des Amburnets. [Fossiliferous Deposits of the Sèches des Amburnets.] *Bull. Soc. Vaud. Sci. Nat.* vol. xiv. pp. 587, 588. [1877.]
Proved by its fauna to belong to the Astartian, overlain by Pterocerian or Kimeridgian, and the last by the Portlandian; the coral-beds of Valfin being absent. W. H. D.

——. [Geological Researches in the Jura.] *Bull. Club alp. Franç. Jura*, 1877.
Notes on Corallian, Kimmeridgian, Portlandian, and Purbeckian.

Coquand, H. Sur l'âge de la *Terebratula janitor*. [Horizon of *T. janitor*.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 148–163. [1877.]
Shows that *T. janitor* belongs to the *A. tenuilobatus* zone (U. Oxfordian or L. Corallian) both in Europe and Algeria.

Cornet, F. L. Sur un Gisement de Combustible dans les Alpes transylvaniennes. [Lignite Deposit in the Transylvanian Alps.] *Ann. Soc. Géol. Belg.* t. iv. pp. 26–38, pl. 2 (map). [1877.]
Describes an Oligocene basin with lignites, &c. in a district (Zsily valley) composed of Cretaceous, Jurassic, and crystalline limestones, slate and serpentine. Gives analysis of lignite, and lists of Oligocene mollusca and plants. W. H. D.

——. Notice sur le Bassin Houiller Limbourgeois. [Limburg Coal Field.] *Ann. Soc. Géol. Belg.* t. iv. pp. 133–142. [1877.] See also **Lambert**, below.
Gives details of borings, with considerations as to the limits of the basin.

——. Note sur quelques Massifs tertiaires de la province du Hainaut. [Tertiaries in Hainault.] *Bull. Ac. R. Belg.* sér. 2, t. xliii. pp. 731–740. [1877.]
Over considerable areas, supposed to be occupied under the Drift (Hesbayan) by Palæozoic rocks, thick masses of Landenian, Ypresian, Bruxellian, and Paniselian form continuous sheets. W. H. D.

Cornet, F. L., and A. Briart. Sur le Relief du Sol en Belgique après les Temps Paléozoiques. [Surface Configuration of Belgium in Post-Palæozoic Times.] *Ann. Soc. Géol. Belg.* t. iv. pp. 71–115, pls. 5–11. [1877.]
The enormous faults and reversals of the Palæozoic rocks of W. Belgium show that before denudation a range equal to the Alps must have been there produced, now replaced by a deep hollow filled with Cretaceous and Tertiary rocks. The progress of elevation and denuda-

tion in the interval between the Carboniferous and Cretaceous is shown in consecutive stages in the plates. W. H. D.

Cornet, F. L., and A. Briart. Note sur l'existence d'un calcaire d'eau douce dans le terrain tertiaire du Hainaut. [Freshwater Tertiary Limestone, Hainault.] *Bull. Ac. R. Belg.* sér. 2, t. xliii. pp. 9-20. [1877.]

Describe a series of lignitiferous marls and freshwater limestones, between the Landenian and the Calcaire do Mons, suggesting their equivalency with the Heersian. W. H. D.

Cotta, Prof. B. v. Ueber das Vorkommen von Kupfererzen in der Gegend N. von Aschaffenburg. [Copper-ore N. of Aschaffenburg.] *Berg- hütt. Zeit.* Bd. xxxv. No. 14. [1876.]

The ore occurs in fine-grained red gneiss, at the junction with the Zechstein.

Credner, H. Ueber ein von E. Dathe entdecktes Vorkommen zahlreicher schwedischer Silurgeschiebe vor dem Zeitzer Thore in Leipzig. [Swedish Silurian Pebbles at Leipzig.] *Sitz. nat. Ges. Leipzig.* [1874.]

See **Dathe,** GEOLOGICAL RECORD for 1874, p. 55.

Credner, Dr. Rudolf. [Origin of the Elbe Valley between Dresden and Bodenbach.] *Zeitschr. gesammt. Nat.* Bd. xlix. (or Folg. 3, Bd. i.) pp. 165-167. [1877.]

Discusses the date of formation of the valley.

Daleau, François. Carte d'Archéologie préhistorique du Département de la Gironde. [Map of the Prehistoric Archæology of the Gironde.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 606-618. [1877.]

Paleolithic Age, pp. 607, 608, represented only in 17 places. Catalogue of observers and authors, pp. 609-618.

Daubrée, —. Sur les Roches cristallines feldspathiques et amphiboliques, qui sont subordonnées au terrain schisteux de l'Ardenne française. [Crystalline Rocks associated with the Slates of the French Ardennes.] *Bull. Soc. Géol. France,* sér. 3, t. v. pp. 106-108. [1877.]

The lamination of these igneous rocks is a sort of cleavage, not bedding.

Debray, —. [Section of a Boring at Baisieux.] *Ann. Soc. Géol. Nord,* t. ii. p. 111. [1875.]

Through loam and sand to chalk.

Deby, Julien. Note sur l'Argile des Polders, suivie d'une liste de fossiles qui y ont été observés dans le Flandre occidentale. [Polders Clay of W. Flanders.] *Ann. Soc. Mal. Belg.* t. xi. *Mém.* pp. 69-90. [1877.]

Lists of fossils, with remarks on the conditions they indicate, and on the present range of the many species of Diatoms.

Deby, Julien. Liste des diatomées fossiles trouvées dans l'argile des Polders. [List of Diatoms in the Polders Clay.] *Ann. Scc. Belg. Micr.* t. iii. *Bull.* pp. lxvi–lxix. [1877.]

Dechen, H. von. Ueber die Konglomerate von Fépin und von Burnot in der Umgebung des Silur vom Hohen Venn. [Conglomerate in the Hohen Venn Silurian District.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. pp. 99–136. [1874.]

——. [Occurrence of Silurian in Belgium.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Sitz.* pp. 40–55. [1874.]

——. [Ironstone and Pyrites of the Zeche Schwelm.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Sitz.* pp. 108–113. [1874.]
Notes on the mode of occurrence in Devonian rocks.

——. [Railway from Löhne to Hameln.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Corr.-Blatt,* pp. 50, 51. [1875.]
Note on Drift, Lias, and Keuper.

——. [Devonian Geology, Rhine Valley.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Corr.-Blatt,* pp. 64, 65. [1876.]

——. [New Coalfield in Dutch Limburg.] *Ann. Soc. Géol. Belg.* t. iv. pp. 130–132. [1877.] (See **Lambert,** below, p. 141.)

Deicke, H. Beiträge zur geognostischen und paläontologischen Beschaffenheit der unterer Ruhrgegend. I. Die Tourtia in der Umgegend von Mülheim an der Ruhr. [Tourtia of Mulheim on the Ruhr.] 23. *Jahresb. Realsch. I. Ordn. Mülheim,* pp. 30. [1876.]

Delvaux, E. Note sur un Forage exécuté à Mons en Septembre 1876. [Boring at Mons, 1876.] *Ann. Soc. Géol. Belg.* t. iv. pp. 51–65. [1877.]
70 metres deep, through Ypresian, Landenian, Heersian, and Calcaire de Mons.

Desor, Prof. E. Compte-rendu d'une Excursion faite à une ancienne Nécropole des Monts Albins recouverte par un Dépôt Volcanique. [Ancient Cemetery covered by a Volcanic Deposit in the Alban Hills.] *Bull. Soc. Sci. Nat. Neuchâtel,* t. xi. cah. 1, pp. 134–141. [1877.]
Gives a sketch of the geology of the district. A bed of soft tuff containing funeral urns of Latian form is covered by peperino, in the base of which occur impressions of ivy leaves. W. H. D.

Dewalque, Prof. G. [Artesian Well, Utrecht.] *Ann. Soc. Géol. Belg.* t. ii. *Bull.* pp. xc, xci. [1876.]
Through more than 130 metres of Sables Moyens.

Domingos, S. Portugal: Notice sur la mine de Pyrite cuivreuse. [Mine of Copper Pyrites, Portugal.] *Lisbon.* [1876.]

Ducrost, —. Dépôt de lehm avec ossements et silex quaternaires à Solutré. [Loam with Bones and Quaternary (worked) Flints, Solutré.] *Mat. Hist. Homme*, sér. 2, t. vii. p. 370. [1876.]

Dücker, — v. [Oolitic Ironstone, Minden.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Corr.-Blatt*, p. 57. [1875.]
Note of discovery.

Dumont, André. Notice sur le nouveau bassin houiller du Limbourg hollandais. [New Dutch Limburg Coal Field.] *Brussels.* [1877.]

Dupont, E. Notice sur le sondage au diamant exécuté à Rheinfelden (Argovie). [Rheinfelden Boring.] *Ann. Mines*, sér. 7, t. viii. p. 154. [1875.]
Passes through the Grès bigarré, Permian, mica-schist, and diorite into granite.

Dybowski, W. Notiz über einen neuen Mammuthzahn-Fund im Gouvernement Minsk. [Mammoth Tooth, Minsk.] 8vo. *St. Petersburg*, 1874.

Ehrenberg, A. [Blende, Maubach, near Düren.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Corr.-Blatt*, pp. 96–98. [1876.]

Engelhardt, H. [Lignite Plants from Kiew.] *Sitz. Isis Dresden* for 1876, p. 113. [1877.]
3 species recognized.

Fabricius, —. [Occurrence of Cinnabar at Dillenburg.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Corr.-Blatt*, p. 91. [1874.]
Occurs in Devonian schalstein.

——. [Notes on the Biedenkopf District.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Corr.-Blatt*, pp. 106–109. [1876.]

Fallon, F. A. Die Hauptbodenarten der Nord- und Ostseeländer des deutschen Reiches, naturwissenschaftlich wie landwirthschaftlich betrachtet. [Soil of N. Germany.] Pp. 128. 8vo. *Dresden.* [1875.]

Falsan, A., and **E. Chantre.** Monographie géologique des anciens glaciers et du terrain erratique de la partie moyenne du bassin du Rhone. [Ancient Glaciers and Drift of the Central Part of the Rhone Basin.] *Ann. Soc. Agric. Lyon*, sér. 4, t. vii. p. 611, map (1 : 80,000). [1875.]
The whole work reprinted in 2 vols. and Atlas. Vol. i. in 1879, vol. ii. in 1880, atlas, of six sheets, 1875. Will be noticed in the GEOLOGICAL RECORD for 1879 and 1880. W. W.

Faly, J. Compte-rendu de la Session Extraordinaire tenue à Mons les 9, 10, 11, et 12 septembre 1876. [Meeting at Mons.] *Ann. Soc. Géol. Belg.* t. iii. pp. xciii–cxxxviii, pl. v. (sections). [1876.]
Silurian, Devonian, and Carboniferous rocks were examined. **F. Cornet, A. Briart,** and **Houzeau de Lehaye** give details.

Farina, Dr. J. F. Menton sous le Rapport Climatologique et Médical. Pp. 251. 8vo. *Paris.* [1875.]
A general description of Mentone Geology, pp. 24–32.

Favre, ~~Enerst.~~ Ernest. Quelques Remarques sur l'Alluvion ancienne. [Ancient Alluvium.] *Arch. Sci. Phys. Nat.* t. lviii. pp. 18–27, pl. ii. [1877.]
Describes sections in the Rhone valley. The alluvial gravels, though cemented in places into a rock which has been eroded and striated, belong to the Glacial period; for boulder clay occurs below as well as above them. W. H. D.

——. Revue Géologique Suisse pour l'Année 1876. [Swiss Geology, 1876.] *Arch. Sci. Phys. Nat.* t. lviii. pp. 121–186. [1877.]
Notices works on Swiss geology in the following order—Topography, Petrology, Mineralogy, Physical Geology, Stratigraphy (by formations), Bibliography (alphabetical). W. H. D.

Filhol, H. Gisement de mammifères fossiles de l'éocène supérieur découvert à Arthés (Tarn). [Bed of U. Eocene Mammalia at Arthés.] *Bull. Soc. Sci. Phys. Nat. Toulouse* for 1875–76. [1876.]

Finot, E. Analyse des Gaz de la Grotte Saint-Mart, à Royat (Grotte du Chien). [Analysis of the Gas of St.-Mart Cave, Royat.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 336–338. [1877.]
The cave is near Clermont, in tuff under basalt. The gas consists of nitrogen, carbonic acid, and oxygen. Discusses the origin of the second and of the excess of the last. W. W.

Firket, Ad. Compte rendu de la Réunion Extraordinaire tenue à Arlon et à Diekirch, du 1^er^ au 4 septembre 1877. [Meeting at Arlon and Diekirch.] *Ann. Soc. Géol. Belg.* t. iv. pp. cxviii–cxxxviii. [1877.]
Notes on Triassic and L. Jurassic rocks.

Focke, —. Ueber plastische Thone als Geschiebe im Blocklehm. [Plastic Clay Pebbles in Boulder Clay.] *Abh. nat. Ver. Bremen,* Bd. v. Heft 3. [1877?]

Fontannes, F. Sur les Ammonites de la zone à *A. tenuilobatus* de Crussol (Ardèche). [Ammonites of the *A. tenuilobatus* zone, Crussol.] *Bull. Soc. Géol. France,* sér. 3, t. v. pp. 33–38. [1877.]
Lists of species, with deductions as to classification of the beds.

Fontannes, F. Sur les Terrains tertiaires supérieurs du Haut-Comtat Venaissin. [U. Tertiaries of Haut-Comtat Venaissin.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 409–416. [1877.] See GEOLOGICAL RECORD for 1877, p. 107.
Divides the beds into 11 divisions.

Forel, Dr. F. A. Matériaux pour servir à l'Etude de la Faune Profonde du Lac Leman. [Bottom Fauna of the Lake of Geneva.] Ser. 1. *Bull. Soc. Vaud. Sci. Nat.* vol. xiii. pp. 1–164, pls. i.–iii. (zool.). [1874.]
§ 1. Nature of the Lake bottom, pp. 9–12. § 3. By **E. Risler** and — **Walther.** Mud of the Lake bottom, analyses, pp. 12–16. § 19. Organic (?) film on the surface of the mud; with letters from **Prof. C. Vogt** and **Prof. A. B. Schnetzler.** W. H. D.

——. Matériaux, &c. [Ditto.] 2nd series. *Bull. Soc. Vaud. Sci. Nat.* vol. xiv. pp. 97–166. [1876.]
Continuation of the above. § 24. Pebbles in the Silt, pp. 116–122. Describes the nature of the bottom at several points. § 25. By **E. Risler** and — **Walther.** Analyses of the bottom silt of 5 Swiss lakes, and remarks thereon by **Dr. Forel**, pp. 122–128. W. H. D.

Fouqué, —. [Visit to Santorin.] *L'Institut*, p. 33. [1875.]
Notes the volcanic rocks, &c.

Fresenius, R. Ueber die Phosphorite der Lahngegend. [Lahn District Phosphorite.] *Jahrb. Nassau Ver. Nat.* Jahrg. 27, 28, p. 217. [1874.]

Frič, Dr. Anton. Ueber die Entdeckung eines Lurchfisches *Ceratodus Barrandei* in der Gaskohle des Rakonitzer Beckens. [Discovery of *Ceratodus* in Rakonitz Gas-coal. *Sitz. k. böhm. Ges. Wiss.* 1874, p. 193.

——. Untersuchung der Dvoretzer Hohle bei Prag. [Exploration of the Dvoretz Cave.] *Sitz. k. böhm. Ges. Wiss.* 1875, p. 151.

——. Ueber die Wirbelthier-Fauna in der Vorzeit Böhmens. [Vertebrate Fauna of Ancient Bohemia.] *Prague*, 1877.

Friedrich, O. O. Die Bildungen der Quartär- oder Glacialperiode mit besonderer Rücksicht auf die südliche Lausitz. [Glacial Deposits, specially in S. Lusatia.] Pp. 17. 8vo. *Zittau*, 1875.

Fuchs, Theodor. Studien über die jüngeren Tertiärbildungen Griechenlands. [U. Tertiaries of Greece.] *Denkschr. k. Ak. Wiss. Wien*, Bd. xxxvii. Abth. 2, pp. 1–42; 5 pls. [1877.]
Describes Pliocene beds, giving lists of fossils and woodcuts of sections. Many of the fossils are described and figured, the following being new species:—*Paludina ornata*, *Congeria minor*, *Cardium tenue*, *Vivipara megarensis*, *Bithynia simplex*, *B. scalaris*, *Hydrobia attica*, *H. Heldreichii*, *Valvata minima*, *Melanopsis incerta*, *Melania Tournouëri*,

M. elegans, *Hydrobia gregaria*, *H. Pauli*, *Lymnæus bicarinatus*, *Valvata græca*, *V. euomphalus*, *Vivipara græca*, *V. Spratti*, *V. incerta*, *Pyrgula quadricarinata* [*tricarinata* in plate], *Melanopsis Bittneri*, *Nerita carinata*, *N. simplex*, *Cardium Spratti*, and *Unio Talandi*. W. H. D.

Gervais, Prof. P. [Elephant-remains in the Garde.] *L'Institut*, 1875, pp. 265, 266.

——. [Fossil Deposit at Durfort, Garde.] *Ibid.* p. 275.

Gerwig, —. Das Erratische in der badischen Bodenseegegend. [Erratics in the L. Constance District.] *Verh. nat. Ges. Karlsruhe*, 1875, p. 83; 2 maps.

Opposes the ice-raft theory, attributing the blocks to the Rhine Glacier.

Gesell, Sándor. [Geology of the Mármaros Iron-ore.] *Földt. Közl.* vol. iv. [1874.] (See below.)

——. [Geological Description of the Occurrence of Coal, Petroleum, and Ozokerite in Unghvar District.] *Földt. Közl.* vol. v. [1875.]

——. Adatok a maramarosi m. k. bányaigazgatósághoz tartozó a megye è. k. részében fekvö vaskobanyaterület földtani megismertetéséhez. [Geological Notes on the Maramaros Ironstone Mining District.] *Math. Természet. Közlem.* köt. xii. pp. 189–216; 2 maps. [1876.]

Deals with metamorphic, Triassic, Liassic, Cretaceous, Eocene, Recent, and Igneous rocks.

Giebel, C. *Trigonia alata*, Brauns vom Salzberge bei Quedlinburg. [*T. alata* from the Salzberg Senonian.] *Zeitschr. gesammt. Nat.* Bd. xlix. pp. 288–292. [1877.]

Questions the identification: see **Brauns**, GEOLOGICAL RECORD for 1876, p. 51.

Gilliéron, —. [Glaciers in the Wiese Valley, Black Forest.] *Arch. Sci. Phys. Nat.* t. li. p. 156, and *Ver. nat. Ges. Graub.* 1874.

Describes moraines, erratic blocks, and striated rocks.

——. Cargneule Nummulitique. [Cellulose Nummulitic Limestone.] *Act. Soc. Helv. Sci. Nat.* 1875.

Note of occurrence in the Diemtigen valley, Bern.

Giorgi, C. de. La terra rossa nel Leccese. [The Terra Rossa of the Leccese.] *Boll. R. Com. geol. Ital.* anno 7, p. 294. [1876.]

Goeppert, —. Ueber das Vorkommen des Elenthieres in Sachsen. [Occurrence of the Elk in Saxony.] 53 *Jahres-Ber. Schles. Ges. Cultur*, p. 38. [1876.]

Gosselet, Prof. J. Le système du poudingue de Burnot. [Burnot Conglomerate.] 3 pls. 8vo. *Paris.* [1874.]

Grad, Ch. Notice sur les Grottes de Cravanche et l'Homme Préhistorique en Alsace. [The Cravanche Caves and Prehistoric Man in Alsace.] *Bull. Soc. Hist. Nat. Colmar*, p. 443. [1876.]

——. Les glaciers et l'origine des vallées. [Glaciers and Valley Erosion.] *Ann. Club alp. Franç.* ann. iii. p. 474. [1877.]
Glaciers protect rocks, abrading them but slightly.

——. Recherches sur la formation des charbons feuilletés interglaciaires de la Suisse. [Swiss Interglacial Lignites.] *Colmar*, 1877.

Greppin, Dr. [The Mayencian.] *Tribune du Peuple, Delémont*, 1874.
Notes range, petrology, and fauna.

——. [Erratic Drift of the Vosges and Black Forest.] *Ibid.* 1874.
Refers this Drift to the Œningian.

——. [Three new Stone-Age Stations.] *Ibid.* p. 245. [1874.]
Section of cave-deposits near Delémont.

——. [Well-section at Basel.] *Ibid.* 1874.
Alluvium and M. Lias.

——. Fossiles du Val Ferret. *Act. Soc. Helv. Sci. Nat.* 1876, p. 59.
List of Bajocian fossils.

——. Notice sur les pavés du Jura. [Paving-stones of the Jura.] *Le Correspondant de Bâle*, Oct. 20, 1877 and Emul. Jur. 1878, p.257.
The Nagelfluh furnishes many Vosgian rocks.

Grosseteste, —. Note relative au lignite de Dux. [Lignite of Dux.] *Bull. Soc. Indust. Mulhouse*, t. xlvii. p. 308. [1877.]

Gümbel, Dr. C. W. Der Boden von München. [The Beds of Munich.] *Beilage der Augsburger allgemeine Zeitung*, no. 109, 18 April, 1876. *I. Bericht über die Verhandlungen und Arbeiten der Commissionen für Wasserversorgung in München*, p. 25. [1876.]

——. Die Geognostische Durchforschung Bayerns. [Geological Sketch of Bavaria.] Pp. 80. 4to. *Munich*, 1877.
Geological address touching on the Geological Surveys of other countries and their maps; on fossil mammalia of the Rocky Mountains; the volcanic rocks of the Ries (Bavaria); the development of the Coalfields of Württemberg and Switzerland; the relations of geology and agriculture; the water supply of Munich, &c.; the Cretaceous fossils of Ratisbon; the secondary and Tertiary rocks of the Alps; Glacial deposits; the Coal measures of U. Franconia and the Palatinate, the Cretaceous Iron Ore of Amberg, &c. In the notes (pp. 43–80) are given references, analysis of Schlier, list of fossils therefrom, &c. W. H. D.

Gümbel, Dr. C. W. Geognostische Mittheilungen aus den Alpen. IV. Der Pechsteinporphyr in Südtirol. [Pitchstone-Porphyry of S. Tyrol.] *Sitz. k.-bay. Ak. Wiss.* Bd. vi. pp. 271–291. [1877.]
Sketches the range and petrological characters, giving analyses by **A. Schwager.** (To notice of No. III. of this series in GEOLOGICAL RECORD for 1876, p. 70, add "*Sitz. k.-bay. Ak. Wiss.* Bd. vi. pp. 51–105" and "Analyses by **A. Schwager.**") W. H. D.

Gurlt, Dr. [Geology of N. Finland.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Sitz.* pp. 114, 115. [1874.]

Gustave, Frère —. De la Richesse des sources calcarifères de la Limagne. [Strength of the Calcareous Springs of Limagne.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 427, 428 (abstract). [1877.]

Gutzwiller, —. Ueber die bei St. Gallen und Rorschach ausgeführten Bohrversuche zur Herstellung artesischer Brunnen. [Artesian Wells in St. Gall Canton.] *Ber. St. Gall. nat. Ges.* for 1873, p. 370. [1874.]
Section in Tertiary beds.

——. Verzeichniss der erratischen Blöcke. [List of Erratic Blocks.] *Ibid.* for 1874, p. 419. [1875.]
List of important blocks in the St. Gall Canton.

Häpke, L. Der Bernstein in nordwestlichen Deutschland. [Amber in N.W. Prussia.] *Abh. nat. Ver. Bremen*, Bd. iv. p. 525, map. [1875.]

Hall, Marshall. Le Val d'Anniviers. *Min. Mag.* vol. i. no. 3, pp. 61–66. [1877.]
Description of a tour: the geology of the country is glanced at, and a list of minerals and rocks given.

Hantken, Miksa. A beocsini marga földtani Kora. [Geological Age of the Beocsin Marls.] *Ertek. Természet. Köréből*, köt. iv. sz. vi. pp. 14. [1874.]
Shows by references to fossils that this marl belongs to the Congeria beds. Gives an analysis by **Prof. D. A. Mack.**

——. A Nummulitok Rétegzeti (Stratigraphiai) jelentősége a Délnyugati Középmagyarországi Hegység O-Harmadkori Képződményeiben. [Notes on the Nummulitic Rocks of the Mountains of S.W. Central Hungary.] *Ertek. Természet. Köréből*, köt. v. sz. vi. pp. 21. [1875.]
Stratigraphical and palæontological details.

——. Adalékok a Kärpátok Földtani Ismeretéhez. [Data on the Geology of the Carpathians.] *Ertek. Természet. Köréből*, köt. viii. sz. vi. pp. 17. [1877.]
Describes the Nummulitic limestone, &c. of Blatnicza, Mosócz, Bella, Potornya, Thurik, and Tót-Lipcse, in the S.W. part of the Central Hungarian Mountains. W. H. D.

Heger, Ritter von. Tausend Meter unter der Erde. Aus den Silber- und Bleigruben von Přibram. [The Pribram Silver and Lead Mine.] *Schrift. Ver. nat. Kenntn. Wien*, Bd. xvi. p. 585. [1876.]

Heim, A. [Wetzikon Lignites.] *Arch. Sci. Phys. Nat.* t. li. p. 153. [1874.]

The glacial deposits underlie the lignites.

——. Ueber einen Fund aus der Rennthierzeit [Relics of the Reindeer Age, Thaingen Cave.] *Mitth. antiq. Ges. Zürich*, 1874.

Records bones of living and extinct animals, an engraved bone, &c. figured here, in *Arch. Anthrop.* 1874, p. 136, and *Mat. Hist. Homme*, 1874, p. 176.

——. Ueber die Entstehung der Alpen. [Origin of the Alps.] *Vierteljahrsschr. nat. Ges. Zürich*, Bd. xxi. p. 297. [1876.]

The elevation is entirely due to folding by lateral pressure.

——. Todi-Sardona-Kärpf Gruppe Itinerarium für das Excursionsgebiet des S. A. C. [Itinerary of the Todi Sardona Group.] *Jahrb. Schweiz. Alpenclub*, 1877, p. 277.

Helmhacker, R. Ueber einige Lagerstätten von Limonit im Serpentin. [Limonit in Serpentino.] *Zeitschr. berg-* hütt. *Ver.* ~~*Kärnten*~~, Steierm, [1876.] (berg-hütt. Ver. ~~Kärnten~~ Steierm)

Henry, J. Etude stratigraphique et paléontologique de l'Infralias dans la Franche-Comté. [Stratigraphy and Palæontology of the Infralias in the Franche Comté.] *Mém. Soc. Emul. Doubs*, sér. 4, t. x. (?) p. 285, and Pp. 156, 5 pls.; 4to. *Besançon*. [1875.]

Describes the Rhætian and Hettangian zones, the former distinct from the Keuper and from the latter, which is connected with the Lias.

Herbich, Dr. Franz. [Geology of the Limestone Ground on the East of the Transylvanian Erzgebirge.] *Földt. Közl.* köt. vii. [1877.]

Herbst, Dr. G. Ein schönes Gestein. [A Beautiful Stone.] *Sonntagsbeilage zur Weimarischen Zeitung*, No. 30. [1875.]

——. Der Genfer See. Ein naturwissenschaftliche Skizze. [L. Geneva.] *Geneva*, 1877.

Gives a résumé of some of the principal traits of Alpine structure, glaciers, and the origin of lakes.

Hilber, Dr. V. Die Miocän-Schichten der Umgebung des Sansal-Gebirges in Steiermark. [Miocene of Sansal Mts., Styria.] *Verh. k.-k. geol. Reichs.* 1877, pp. 293–296.

Compares the Sansal and Gamlitz series.

Hörnes, R. Zur Geologie der Steiermark. I. Paläozoische Bildungen der Umgebung von Graz. II. Auftreten von Phyllit bei Wildon, Glacialbildungen von Gamlitz, bei Ehrenhausen. [Geology of Styria; Devonian of Graz, Phyllite of Wildon, Glacial of Gamlitz.] *Verh. k.-k. geol. Reichs.* 1877, pp. 198-202.

Holza, —. Uebersicht der geologisch Verhältniss von Nikolsburg und der Umgebung. [Geology of Nikolsburg, Moravia.] *Nikolsburg,* 1876.

Hundt, —. [Bone-Caves in the Biggethal.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Corr.-Blatt,* pp. 76-78. [1874.]

Inkey, Béla v. [Granite and Trachyte of the Alba Velencz Mts.] *Földt. Közl.* vol. v. [1875].

Jack, R. L., and **John Horne.** Glacial Drift in the North-eastern Carpathians. *Quart. Journ. Geol. Soc.* vol. xxxiii. pp. 673-681. [1877.]

The district of the source of the Theiss consists of Eocene Flysch, with patches of older rocks and of Tertiary trachytes, &c. The Drifts consist of stiff Till, with subangular blocks, torrential "cônes de déjection," and terraces of river-gravel. W. H. D.

Jacquot, —, and **— Raulin.** Statistique géologique et agronomique du département des Landes. Pt. 1. [Geological and Agricultural Statistics of the Landes.] Pp. 270, geol. map (1:200,000). 8vo. *Mont-de-Marsan,* 1874.

Jaubert, —. Note sur la constitution géologique de la montagne d'Aurouse. [Geology of the Aurouse Mt.] *Ann. Club alp. Franç.* ann. 3, p. 322. [1876.]

Jentzsch, Dr. A. Ueber die Erzgänge von Langenstriegis bei Frankenberg. [Ore-vein, Frankenberg.] *Sitz. nat. Ges. Leipzig,* no. 5. [1874.]

——. Ueber Reste von Büffeln aus der Provinz Preussen. [Buffalo Remains in Prussia.] *Schrift. phys.-ökon. Ges. Königsberg,* Jahrg. 17, *Sitzungsb.* p. 9. [1876.]

Jicinsky, Wilhelm. Der Zusammenhang der mährisch-schlesischen und der preussisch-schlesischen Kohlenformation. [Correlation of Moravio-Silesian and Prusso-Silesian Coal Measures.] 8vo. *Vienna,* 1877.

Jonkowsky, —. Note sur l'exploitation des couches de houille puissantes et très-inclinées à Dombrowa (Pologne). [Working of Highly-inclined Coal Seams in Poland.] *Bull. Soc. industr. min. St. Etienne, sér.* 2, t. v. livr. 3, p. 353. [1876.]

Julien, —. Essai de parallélisme entre les trois grands bassins tertiaires de la France. *Compt. Rend. Assoc. Franç.* 5 sess. p. 406 (6 lines). [1877.]

Julien, —. Etude sur les faunes paléozoïques de la France centrale. *Compt. Rend. Assoc. Franç.* 5 sess. p. 418 (6 lines). [1877.]

Karsten, Prof. [Caves at Schaffhausen.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Sitz.* pp. 31–36. [1874.]
Describes 2 caves.

Klebs, R. Ueber die Anlage und den Inhalt der Gruben in Klein-Budsch-Winken. [Commencement and Progress of the Mine at Klein Budsch Winken.] *Schrift. phys.-ökon. Ges. Königsberg*, Jahrg. 17, *Sitz.* p. 4. [1876.]

Koch, Dr. Antal. [Secondary Rocks of N.W. Bakony. Further Notes on the Locality of *Brachydiastematherium*.] *Földt. Közl.* vol. v. [1875.]

——. [New Data on the Geology of the Frusca Gora.] *Földt. Közl.* vol. vi. [1876.]

——. A Közetek Tanulmányozásának Módszerei Alkalmazva a Sz.-Endre-Visegrádi Trachyt-csoport Közeteire. [Petrological Methods illustrated by the St. Andrew Plintenburg Trachyte Group.] *Ertek. Természet. Köréből*, köt. vi. sz. xi. pp. 45. [1876.]
Deals chiefly with trachytic rocks, but gives lists of fossils from the associated sedimentary beds (Trias, Eocene, Miocene, Pliocene, Quaternary, and Recent).

——. Elöleges jelentés a szt.-endre-visegrádi trachythegycsoportnak az 1874. év nyarán bevégzett részletes földtani vizsgálatáról. [Geology of the Trachyte Mountains between St. Andrew and Plintenburg (Visegrad).] *Math. Természet. Közlem.* köt. xii. pp. 19–23. [1876.]
Notes on trachyte-breccias, Tertiary (Sarmatian) lignites, and Oligocene.

——. Megjegyzesek Rochlitzer József földtani térképo Fruska Gora felett és neháhy adat ezen hegység földtani ismertetesehez. [Remarks on Rochlitzer's Geological Map of the Frusca Gora and Notes on the Geology of that Range.] *Földt. Közl.* köt. vii. pp. 15. [1877.]

——. A Dunai Trachytcsoport jobbparti részenek (Sz.-endre-visegrad-esztergomi Hegycsoport) Földtani Leirása a hegy-és vizrajzi Viszonyok Elörebocsátásával. [Geological Description of the Orography and Hydrography of the Trachyte Group of Mountains between St. Andrew, Plintenburg, and Gran, on the Right Bank of the Danube.] Pp. viii, 298 ; 6 pls. (4 rock-sections, 2 maps). 8vo. *Budapest*, 1877.
Stratigraphical and petrological details of the U. Tertiary beds (consisting chiefly of trachytic tuffs and breccias of U. Mediterranean,

Sarmatian, and Pontic age, followed by diluvium and alluvium), with lists of fossils, and analyses of rocks. Triassic dolomite, Eocene and Oligocene beds occur near Gran, and Oligocene (in 2 divisions) as frequent inliers between Pomaz and Bogdány. The large folding map shows 26 divisions. W. H. D.

Koch, Dr. C. Ueber die Schichtenfolge des rheinischen Schiefergebirges. [Succession in the Rhenish Slates.] *Jahrb. Nassau Ver. Nat.* Jahrg. 27, 28, p. 218. [1874.]

——. [Metamorphic and Devonian Rocks of Mt. Taunus.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Corr.-Blatt*, pp. 92–97. [1874.]

——. [Fossils in the Taunus Quartzite.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Corr.-Blatt*, pp. 130–134. [1876.]
Brachiopoda and plant-remains.

——. [Origin of Rock-Striation in the Greenstone of Nauród, in the Taunus Mts.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiv. *Corr.-Blatt*, pp. 112–117. [1877.]

——. Beitrag zur Kenntniss der Ufer des Tertiärmeeres im Mainzer Becken. [Tertiary Shore-line in the Mayence Basin.] L. Senckenb. Nat. Ges. [1877.]

Koch, Dr. G. A. Ein Beitrag zu den geologischen Aufnahmen im Rhätikon und der Selvrettagruppe. [Geological Excursion in the Rhætic Alps.] *Verh. k.-k. geol. Reichs.* 1877, pp. 202–205.
Notes on metamorphic rocks, Stramberg Limestone, &c.

Koenen, Prof. von. [Geology of the Cassel-Marburg District.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Cor.-Blatt*, p. 71. [1874.]
Lias and Tertiary.

——. [Zechstein, Frankenberg.] *Verh. nat. Verh. preuss. Rheinl.* Jahrg. xxxii. *Corr.-Blatt*, pp. 58–61. [1875.]

——. Ueber einige geologische Vorkommnisse der Umgegend Marburgs. [Geology of Marburg.] *Sitz. Ges. Beförd. Nat. Marburg*, nos. 5, 6, p. 56. [1875.]
Refers to Lias at Waber, &c., Devonian fossils, &c.

Koninck, L. L. de. Note sur la présence du rutile aux environs de Vieil-Salm. [Occurrence of Rutile near Vieil-Salm.] *Ann. Soc. Géol. Belg.* t. iv. pp. cvii, cviii.
Note of occurrence.

Kořistka, K. Ueber die erloschenen Vulcane der Auvergne und über seine Ersteigung des Puy de Dôme. [Extinct Volcanoes of Auvergne. Ascent of the Puy de Dôme.] *Sitz. k. böhm. Ges. Wiss.* 1876, p. 99.

Kowalewski, —. [Amber Mine, Baltic Coast.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Sitz.* pp. 171, 172. [1874.]
Gives a section in U. Tertiary beds.

Krejči, —. Ueber ein neues Vorkommen des Bernsteines in der böhmischen Kreideformation. [New Occurrence of Amber in the Bohemian Cretaceous.] *Sitz. k. böhm. Ges. Wiss.* 1875, p. 148.

——. Ueber die Verbreitung der Kreideformation am obersilurischen Plateau zwischen Prag und Beraun. [Range of Cretaceous over U. Silurian between Prague and Beraun.] *Ibid.* p. 186. [1875.]

——. Ueber das Vorkommen des Basaltes bei St. Ivan unweit Beraun. [Basalt near Beraun.] *Ibid.* p. 214. [1875.]

Krotoff, P. I. Kratkii ottchete o geologitcheskoi ekskurie ve kotelnitcheskii Uiezle Viatskoe Gubernii. [Short Account of a Geological Excursion to Kotelnitch, Viatka.] 8vo. *Kazan*, 1877.

Kürthy, Sandór. [Geology of the Kalten-Szamos.] *Földt. Közl.* vol. vi. [1876.]

Lambert, Prof. Guillaume. Nouveau Bassin Houiller découvert dans le Limbourg Hollandais. [New Coal Field in Dutch Limburg.] *Ann. Soc. Géol. Belg.* t. iv. pp. 116–130, and *Trans. N. Engl. Inst. Eng.* vol. xxvi. pp. 15–25, pls. iv.–vi. [1877.] [See also GEOLOGICAL RECORD for 1876, p. 84.]
Describes borings through Tertiary and Cretaceous beds into Coal Measures.

Laube, Dr. G. Der Aetna. [Etna.] Sitz. pp 19 ~~8vo. Prague,~~ 1877.

Lehmann, J. Ueber die Riesentöpfe Strudellöcher des Chemnitzthales. [Giants' Kettles, Chemnitz.] *Sitz. nat. Ges. Leipzig*, no. 57, p. 50. [1874.]

Lenz, Dr. O. Reisebericht aus Ostgalizien, [Journey in E. Galicia.] *Verh. k.-k. geol. Reichs.* 1877, pp. 244, 245.
Notes chiefly Cretaceous rocks; but Trias, Silurian, and Devonian are also present.

——. Zur Gypsfrage in Ostgalizien. [Age of E. Galician Gypsum.] *Verh. k.-k. geol. Reichs.* 1877, pp. 277, 278.
Gives a section, referring the beds to the Sarmatian.

Leymerie, A. Mémoire sur le terrain crétacé du midi de la France. [Cretaceous of S. France.] *Rev. Sci. Nat.* t. vi. [1877.]

Liszkay, Gustav. [Geology of Zsarnowitz, Gran Valley.] *Földt. Közl.* vol. vi. [1876.]

Liszkay, Gustav. [Tetradymite at Zsubkó ; Ore-beds of Zsarnócza ; New Locality for Asbestos ; Pyrolusite and Marble in Theissholz.] *Földt. Közl.* köt. vii. [1877.]

Lóczy, Lajós. [Geology and Palæontology of the Arad District.] *Földt. Közl.* vol. v. [1875.]

——. [Geology of the Drocza Mts., Arad, and Mineral Occurrences there.] *Földt. Közl.* vol. vi. [1876.]

——. [Peculiar Valley Structure in the Bihar Mts.] *Földt. Közl.* köt. vii. [1877.]

——. [Human and other Remains in the Baráthegy Cave.] *Termész. Közl.* köt. ix. [1877.]
See fuller work noticed p. 87.

Lodin, —. Note sur la constitution du massif Granitique de Flamanville. [Granite Massif of Flamanville.] *Bull. Soc. Linn. Norm.* sér. 2, t. x. p. 353. [1876.]

Lossen, A. K. Ueber die Porphyroide des Harz. [Harz Porphyroid.] 8vo. ? *Harzburg*, 1876.

——. Geologische Kartirung des auf der Ostseite der Brocken-Granitmasse gelegenen Harzgebietes. [Geological Mapping of the Harz Mts. E. of the Brocken Granite.] 8vo. *Harzburg*, 1876.

Lotti, B. Due parole sulla geologia dei dintorni di Chiusdino (provincia di Siena). [Geology of Chiusdino.] *Boll. R. Com. geol. Ital.* vol. viii. pp. 319–324. [1877.]
Describes Miocene and Pliocene rocks, saline springs, gypsum, solfataras, boracic soffioni, and serpentine.

Ludmann, —. Der intermittirende artesische Springbrunnen des Ránk Herlaner Bades in Ober-Ungarn. [Intermittent Artesian Spring at Ránk Herlany, U. Hungary.] *Mitth. geogr. Anst.* Bd. xxiii. [1877.]

Macar, Julien de. Note sur quelques Synonymies de Couches et quelques Failles du Système Houiller du Bassin de Liége. [Synonymy of Beds and Faults in the Liége Coalfield.] *Ann. Soc. Géol. Belg.* t. iv. pp. 8–25, pl. 1 (showing faults only). [1877.]

Maderspach, Livius. [Zinc Ores at Pelsöcz-Ardó.] *Földt. Közl.* vol. vii. [1877.]
The ores occur in Triassic rocks.

Magnan, H. Matériaux pour une Etude Stratigraphique des Pyrénées et des Corbières. Les Roches Ophitiques et les Terrains qui les renferment (Laurentien, Cambrien, Silurien, Dévonien, Carbonifère, Houiller, Permien, Triasique, Jurassique et Crétacé In-

férieur); Remarques sur la formation des Montagnes Pyrénéennes et Corbiériennes et notamment sur l'importance des failles et des érosions. [Ophitic Rocks and the surrounding Formations in the Pyrenees and Corbières Mts.] *Mém. Soc. Géol. France,* sér. 2, t. x. pp. 111, pls. i.–iv. (sections and map). [1874.]
Summarizes the previous literature of the subject. Describes the several formations (giving lists of fossils), the orography, faults, denudations, and Drifts. The unconformities in the older rocks are but two, viz. between L. Carboniferous and Coal Measures, and between the L. and M. Cretaceous. The U. Cretaceous and Eocene are horizontal on the crest of the Pyrenees, whilst the L. and M. Miocene, also horizontal, lie at the foot. In the Corbières, the erosion of these and older rocks afforded the material of the U. Miocene. The range was formed by depression of the surrounding country along faults (*not* by elevation), unaccompanied by igneous action. The ophites are of hydrothermal origin, sedimentary, and contemporaneous with the surrounding beds; the term includes all the granitoid rocks with more or less magnesian silicates—amphibolite, diorite, lherzolite, serpentine, spilite, and porphyry. W. H. D.

Majláth, A. von. [Lizskova Cave.] *Archæol. Közlem.* köt. ix. [1874.]
Results of an examination of this cave (see **Lóczy,** p. 87).

Malaise, C. Excursion géologique et botanique du 23 mai 1875. Pp. 4. 8vo. *Brussels.* [1875.]

Manigler, —. Lignites tertiaires de Saint-Santin. *Compt. Rend. Soc. Industr. Min. St. Etienne,* p. 15. [1877.]

Marcinowski, —. Ueber die Lagerungsverhältnisse der Bernsteinsformation am samländischen Weststrande. [Amber-Beds, Prussian Coast.] *Schrift. phys.-ökon. Ges. Königsberg,* Jahrg. 17, ~~Sitzungsb.~~ Abh., p. ~~17.~~ 93. [~~1878.~~] 1877

Marck, v. d. [Origin of the "Sternberg Cakes."] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Corr.-Blatt,* pp. 81, 82. [1876.]
Describes ironstone concretions from Oligocene, Sternberg.

Martin, K. Silur-, Devon-, Trias-, Jura-, Kreide- und Tertiär-Geschiebe aus Oldenburg. [Various Drift Pebbles at Oldenburg.] *Abh. nat. Ver. Bremen,* Bd. v. Heft. 3. [1877?]

Mathieu, Prof. —. Grotte nouvelle de Barèges, Description de Débris trouvés par M. Faure. [Cave at Barèges]. *Compt. Rend. Assoc. Franç.* 5 sess. p. 670 (abstract). [1877.]
The cave is natural; as yet only pottery found.

Matyasovszky, J. A Duna-meder Földtani Viszonyainak Befolyás a Budapest és Környekenek Vizáradására. [Geological Effect of the Floods in the Budapest District on the Danube River-bed.] *Budapest,* 1876.

Mayer, K. Ueber das Alter der Uetliberg-Nagelfluh. *Vierteljahrsschr. nat. Ges. Zürich*, Bd. xx. Heft 3. [1875.]
Regards this deposit as Miocene.

——. Ueber das Alter der Au-Nagelfluh. *Ibid.* p. 465. [1875.]
Regards this deposit as Pliocene.

Mercey, — de. Géologie résumée des cantons de la Somme: Amiens (fin). [Geology of the Somme, continued.] *Bull. Soc. Linn. N. France*, p. 98. [1876.]

——. [Ditto.] Acheux. *Ibid.* p. 125. [1876.]

Messikomer, —. Torfmoore. [Peat Bogs.] *Neue Alpenpost*, Bd. iv. p. 289. [1876.]
Many peat-bogs are in ancient lake beds, as those of Hombrechtikon and Bubikon in Canton Zurich.

Merk, C. Der Höhlenfund im Kesslerloch bei Thayngen (Kanton Schaffhausen). [Cave Discoveries at Thayngen.] *Mitth. ant. Ges. Zürich*, Bd. xix. [1875.]
Describes and figures bones, &c. from this cave.

Mieg, M. Note sur les derniers puits creusés au nouvel hôpital militaire (juillet et août 1876). [New Wells, Mulhouse.] *Bull. Soc. Industr. Mulhouse*, t. xlvii. p. 26. [1877.]

Mietzsch, H. Section Zwickau. Blatt 111. [Explanation of the Zwickau Sheet (111) of the Geological Survey of Saxony.] *Erläut. geol. Specialkarte Sachs.* pp. 55. [1877.] Price 75 pf.
In the Erzgebirge are Coal Measures and Dyas: in the marshlands L. Oligocene, Drift, and Alluvium. Lists of fossil plants, notes on igneous rocks of M. Dyas age, and details of sections are given. W. H. D.

——. Section Lichtenstein. Blatt 112. [Explanation of the Lichtenstein Sheet (112).] *Erläut. geol. Specialkarte Sachs.* pp. 60. [1877.] Price 75 pf.
Archæan schists in the M. Coal Measures and Rothliegende in the Erzgebirge; L. Oligocene, Drift, and Alluvium in the marshlands. Lists of fossil plants, details of shaft- and other sections, and petrological notes on igneous rocks of M. Dyas age are given. W. H. D.

Möhl, H. Die geognostischen und Boden-Verhältnisse des Kreises Cassel. [Geology of Cassel District.] *Zeitschr. Reg.-Bez. Cassel*, pp. 25. [1874.]

Moeller, V. von. Geologitcheskoe opisanie Ilimskoi i Utkinskoi Kazenniche datche na Ourale i Rezultate proisvedenniche ve niche razviedo tchnicho na Kamenneii ougole rabote. [Geological Description of the Ilimsk and Utka Coal-fields in the Ural, and Results of Exploratory Borings for Coal.] Pp. 226; 6 pls. (2 maps, 4 pls. sections). 8vo. *St. Petersburg*, 1875.
razviedotchnich/.
Detailed description of the districts, consisting of Silurian, Devonian, Carboniferous, Permian, and Quaternary rocks; with lists of fossils.

Mohr, Prof. [Geology of the Gotthard Tunnel.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Sitz.* pp. 282–292. [1875.]

——. [Faroe Islands.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg xxxiii. *Sitz.* pp. 114–118, 124–126. [1876.]
Describes the Miocene coal, intercalated in basalt.

Molon, —. Sopra un cranio ed altri oggetti, probabilmente d'origine etrusca, rinvenuti nelle antiche alluvioni del Vicentino. [Skull, &c. in Old Alluvia in the Vicentine.] *Atti Acc. Olimp. Vicenza* for 1875. [1876.]

Morière, —. De la Présence du Genre *Scolithus* dans le Grès Silurien de May. [*Scolithus* in Silurian Sandstone of May.] *Bull. Soc. Linn. Norm.* sér. 2, t. 8, pp. 119–129. [1874.]
By comparison of the L. Palæozoic series of La Manche, Calvados, &c. shows that the Lingula Flags, characterized by *Scolithus* borings, are constant throughout W. France, and are followed by beds correlated with the Caradoc and other Silurian rocks. W. H. D.

Mourlon, Michel. Sur le classement stratigraphique des Phoques fossiles recueillis dans les Terrains d'Anvers. [Stratigraphical Arrangement of the Fossil Seals of Antwerp.] *Bull. Ac. R. Belg.* sér. 2, t. xliii. pp. 603–609. [1877.]
Of the 16 species, 5 are referred to the U. Miocene, 10 to the Scaldisian, 1 to the Quaternary.

Müller, Prof. A. Documente zur Gründung der schweizerischen Steinkohlbohrgesellschaft veröffenlicht durch die aargauische Bank. [Foundation of the Swiss-boring Company.] Pp. 21, geol. map. 4to. *Aarau.* [1874.]
Contains a sketch of Swiss Coal Measure Geology, a theoretical section of coal-beds, and a geological map of the Rheinfelden district.

——. Die ältesten Spuren des Menschen in Europa. [Oldest Evidence of Man in Europe.] Ed. 2, Bd. i. Heft 3. [1876.]
Deals chiefly with the Swiss antiquities, describing glacial and interglacial deposits, the epochs of mammoth, reindeer, etc. Regards man as originating in the Miocene. W. H. D.

Müller, —. Ueber Gange und Ausscheidungen von Faserkalk in einem Dachschieferbruche bei Wildungen. [Veins of Calcite in the Wildungen Roofing Slate, and their Bifurcations.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Corr.-Blatt*, pp. 45–48. [1876.]

Muhlberg, —. Structure du Jura argovien. [Argovian Jura.] *Act. Soc. Helv. Sci. Nat.* 1876, p. 51.
Describes the Muschelkalk and higher beds between Hauenstein and Schinznach, and the many faults in this tract.

Naranjo y Garza. Datos geológico-mineros de la provincia de Burgos. [Geology and Mineralogy of Burgos.] *Rev. Min.* ser. B, p. 191. [1876.]

Nathorst, A. [Distribution of Arctic Plants N. of the Alps during the Glacial Period.] *Arch. Sci. Phys. Nat.* t. li. p. 52. [1874.]

List of plants from glacial clay and peat of Schwerzenbach, Zurich.

Noguès, —. [Tertiary of the Déserts, Chambéry]. *Bull. Soc. Géol. France*, sér. 3, t. v. p. 308. [1877.]

Gives a section of Tongrian beds.

——. De l'Extension des Terrains houillers. [Extension of the Coal Measures.] *Compt. Rend. Assoc. Franç.* 5 sess. p. 407 (6 lines and Discussion). [1877.]

North, F. W. The Dordrecht Coal-field. *London Iron Trades Exchange*, vol. xxi. p. 233. [1877.]

Ollier, de Marichard. Présentation d'un Crâne plagiocéphale de la Grotte de Louoi et d'un Crâne des Coulées volcaniques de Mirabel (Ardèche). [Skulls from the Grotto of Louoi and from the Volcanic *coulées* of Mirabel.] With Discussion by **M. Broca.** *Compt. Rend. Assoc. Franç.* 5 sess. pp. 565, 566. [1877.]

Describes the finding of the skull in the cave.

Olry, —. Notes géologiques sur le département de Meurthe et Moselle. [Geology of the Meurthe and Moselle.] *Bull. Soc. Sci. Nancy*, 1876, p. 33.

Ortlieb, —. [Observations on the Letter of M. Vanden Broeck.] *Ann. Soc. Géol. Nord*, t. ii. pp. 64, 65. [1875.]

Thinks that observers have not always been deceived into classing as Laekenian what is only altered Bruxellian.

——. Résumé des travaux de la Société en 1875. *Ann. Soc. Géol. Nord*, t. iii. pp. 119–130.

Palmieri, Luigi. Cronaca del Vesuvio. Sommario della storia de' principali accendimenti del Vesuvio dal 1840 fino al 1871 : seguita da estesa relazione dell' ultimo incendio del 1872. [Principal Eruptions of Vesuvius 1840–1871, and Full Account of the Eruption of 1872.] *Ann. R. Oss. Vesuv.* n. s. ann. 1, pp. 164; 5 plates (3 of views). [1874.]

Pp. 1–88 explained in title. General conclusions, 88–91. On the Genesis of Tenorite, by **Prof. Guiscardi,** 105–108. Oligist-iron in a bomb, 112, 113. Alkaline Carbonates, 114, 115. Note, by **A. Scacchi,** on Minerals of the 1872 eruption, 122–128. Seismographic Observations (tables), 129–153. W. W.

Pantanelli, Dante. Rapporto della direzione del museo di mineralogia e paleontologia. [Report of the Museum of Mineralogy and Palæontology of Siena.] *Atti* ~~*dell'*~~ R. *Ac*~~*c*~~*. Siena*, ser. 3, vol. i. fasc. vi. [1876.]

Contains a list of 330 species of Pliocene Mollusca from the neighbourhood of Siena.

Pantanelli, Dante. Rapporto della direzione del museo di mineralogia e paleontologia. *Atti* R *Acc. Siena,* ser. 3, vol. i. fasc. 8. [1877.]

Notes the following new forms of Mollusca from the lignite of Casino—*Helix senensis*, *Nematurella Silvestri*, *Emmericia Casinii*, *Melania Lawley*[*i*], *M. elegantissima*, *M. de Stefani*, *M. Soldania* (De Stef.), and *Neritina Capellini*. W. W.

Parisot, —. Description Géologique et Minéralogique du Territoire de Belfort. [Geology and Mineralogy of Belfort.] *Mém. Soc. Belfort. Emul.*, pp. 226; 2 pls. [1877.]

Petit-Bois, G. Note sur la formation du Soufre à Calamaki (Grèce). [Formation of Sulphur in Greece.] *Ann. Soc. Géol. Belg.* t. iv. pp. 66–70. [1877.]

Describes a cave constantly pouring forth sulphuretted hydrogen, and formed in a vesicular rock impregnated with sulphur and gas.

Pillet, —. Orographie et Géologie de la chaîne du Nivolet, Savoie. [Geology of the Nivolet Chain, Savoy.] *Ann. Club alp. Franç.* ann. iii. p. 519. [1877.]

Describes the dislocations, &c. of the Urgonian, Neocomian, Valangian, Berrias Marls, and U. Jurassic.

Platz, —. Ueber die Spuren ehemaliger Gletscher im Schwarzwald. [Traces of Extinct Glaciers in the Black Forest.] *Karlsruher Zeitung*, Nov. 30, 1877.

Records lateral and terminal moraines in several valleys.

Pommerol, Dr. François. La Géologie de la Limagne dans ses Rapports avec les grandes Oscillations de l'Ecorce terrestre. [Geology of the Limagne in connexion with great Oscillations of the Earth's Crust.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 395–406. [1877.]

Miocene Period. Great part of Europe covered by sea. Lasted for an immense time.—Pliocene Period. Elevation of the ground, formation of the valleys begun. Passed gradually into the next.—Quaternary Period. Continuance of the movement of elevation. Great erosion.—Recent Period. Gradual lessening of water in rivers &c. W. W.

——. Existence de l'homme en Auvergne à l'époque du renne et des volcans à cratère. [Man in Auvergne at the Epoch of the Reindeer and of the Volcanos.] *Compt. Rend. Assoc. Franç.* sess. 5, pp. 661-668, woodcut sections. [1877.]

Notes the occurrence of beds with worked flints in the valley of Sarliève, giving sections, and describing the composition of the gravel. Notices the fauna and flora of the deposit. Concludes that man lived during the volcanic eruptions and the inundations of the Limagne.

W. W.

Popovits, Al. [Geology of the Frusca Gora.] *Földt. Közl.* vol. vi. [1876.]

Prendel, R. Sarmatskiya obrazovaniya Sebastopolya i ego okrestnostei. [Sarmatian of the Sebastopol District.] *Zapiski Novoruss. Obsch. Estest.* vol. iii. [1876.]

Probst, —. [Glacial Deposits of U. Swabia.] *Jahresb. Ver. Nat. Württ.* Jahrg. xxx. p. 40. [1874.]
Describes the Nagelfluh, Boulder clay, &c.

Quiquerez, —. [Researches near Delémont.] *Indic. Antiq. suisses,* 1874, p. 551.
Implements and bones in Quaternary loam.

——. [Cave at Pontarlier.] *Journal de Pontarlier,* Oct. 4, 1874.
Bones of carnivora, &c.

——. Notice sur des débris de l'industrie humaine découverts dans le terrain quaternaire à Bellerive près de Delémont en 1874. [Human Industrial Remains in the Delémont Quaternary.] *Mitth. nat. Ges. Bern,* 1876, p. 55.
Prehistoric implements and bones in loam.

Quirogue, F. Présentation de Blé fossile. [Fossil Wheat.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 633, 634; Abstract (7 lines). [1877.]
In the cave of Beaume-Noir.

Radde, —. Ueber die geologischen Verhältnisse im Kaukasus und die Grundzüge des Reliefs auf dem Isthmus. [Geology of the Caucasus.] *Schrift. phys.-ökon. Ges. Königsberg,* Bd. xiv. p. 10. [1874.]

Raffelt, R. Ueber einen Fund von 19 Zähnen von *Ptychodus latissimus,* Agassiz, in einer Plänerkalkgrube in Settenz bei Teplitz. [Discovery of 19 Teeth of *P. latissimus* in Plänerkalk, Teplitz.] *Verh. k.-k. geol. Reichs.* 1877, pp. 279–282.
Section of quarry and measurements of the teeth.

Ramsay, Prof. A. C. Report on the Question of the Supply of Fresh Water to the Town and Garrison of Gibraltar. Pp. 10. Fol. *London.* (Blue Book.) 1877.
Describes the geology of the rock and district. See also p. 102.

Rath, G. vom. [Geology of E. Transylvania.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Corr.-Blatt,* pp. 82–107. [1875.]
Describes the Ditro syenite and the Hargitta trachyte. See GEOLOGICAL RECORD for 1876, p. 212, for notice of his larger work.

Rath, G. vom. [Ash-rain, Scandinavia, and Eruption in Iceland.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Sitz.* pp. 137–144, 154–161. [1875.]
The ashes came from Iceland, the volcanic phenomena of which are described.

——. [Basalt Mountains of L. Balaton, Hungary.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Corr.-Blatt*, pp. 109–127. [1876.]

——. [Vöröspatak and Nagyag, Transylvania.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Sitz.* pp. 54–81. [1876.]
Describes the rocks of the Gold-fields.

——. [Faroe Islands Coal.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Sitz.* pp. 132, 133. [1876.]
Refers to Prof. Mohr's remarks noticed above (p. 145).

——. [Silesio-Hungarian Railway.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Sitz.* pp. 139–203. [1876.]
The line passes over Trias, Teschen beds (Neocomian), Godula Sandstone (Gault), Friedecker beds (Turonian), Baschker Sandstone (Senonian), Istebner Sandstone (Cenomanian), Eocene and Oligocene with Igneous rocks. Notes on the minerals (ores of iron and copper, opal, &c.) are given. W. H. D.

——. [Tour to Kremnitz and Schemnitz in Hungary.] *Verh. nat. Ver. preuss. Rheinl.* Folg. 4, Bd. iv. *Sitz.* pp. 291–324. [1877.]
Notes on rocks and minerals. (Wrongly entered in the GEOLOGICAL RECORD for 1877, p. 90.)

Regelmann, C. Die Quellwasser Württembergs. [Württemberg Well-water.] *Württ. Jahrb. Stat. Landesk.* pp. 95. [1874.]
Touches on the geology.

Reinhardt, —. Ueber diluviale Fünde bei Müggelheim (südöstlich von Köpenik). [Drift Fossils, Muggelheim.] *Sitz. Ges. nat. Freunde Berlin*, 1877, pp. 173–176.
Records the discovery, in diluvial sand, of mammoth, rhinoceros, and some mollusca, of which *Paludina diluviana* is peculiarly formed and *Cyclas solida* found fossil for the first time. W. H. D.

Rendu, —. Theory of the Glaciers of Savoy. Translated by **A. Wills**, with additional notes by **Tait, Ruskin,** and **Forbes.** [1874.]

Rey-Lescure, —. 1. Mouvement du Sol, formation et relation des terrains tertiaires avec les terrains secondaires au sud-ouest du plateau central. 2. Cartes, coupes et notices agrogéologiques et hydrologiques du département de Tarn-et-Garonne. *Compt. Rend. Assoc. Franç.* 5 sess. pp. 421–427. [1877.]

Notes the areas of the chief groups of rocks, as shown on this map (Granites, with gneiss and schists; Triassic sandstone and dolomites; Infra-Lias and Lias; Jurassic limestones; and Tertiary beds). Notes the brown soil, resulting from decomposition, on the limestones and various clays of geyserian or lagoon origin (Eocene), during the formation of which hydrothermal deposits of phosphate of lime occurred along certain axes. W. W.

Ribbentrop, —. [L. Devonian, Eifel.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Corr.-Blatt*, pp. 103–106. [1876.]

Notes on the range of the beds, with analyses of the waters of 2 mineral springs by **Dr. A. Classen.**

Risler, E. Etudes sur le Sol Arable. *Journ. Soc. Agric. Suisse Romande*, ann. xvi. [1875.]

37 analyses of rocks used as manures in the Valais, Vaud, and Geneva cantons. Description of the Molasse, Glacial, and Recent deposits.

Ritz, R. Verzeichniss der Minerale des Thales Bezirkes Goms mit Angabe der Fundorte. [List of Minerals of the Valais round Goms, with Localities.] *Bull. Soc. Murith. Valais*, 1876, p. 38.

Rivière, E. [Bone-breccia of Nice.] *L'Institut*, 1875, pp. 66–68.

Rochat, L. Le gisement bitumineux du canton de Genève. [Bituminous Molasse of Geneva.] [1877.]

Describes the deposit, giving analyses.

Roemer, —. Ueber einige neue schlesische Mineralvorkommen. [New Mineral Localities in Silesia.] 53 *Jahres-Ber. schles. Ges. Cultur*, p. 35. [1876.]

Romanoffsky, —. [*Fusulina* in U. Carboniferous Limestone of Jurak Tau, Sterlitamak.] *Verh. k. russ. min. Ges.* ser. 2, Bd. ix. p. 225. [1874.]

Roth, Dr. S. A Löcse környékén előforduló karpati homokkö petrographiai leirása. [Petrographical Notes on the Carpathian Sandstone occurring in the District of Leutschau (Löcse), Hungary.] 8vo. ~~*Budapest*~~, 1876.
Földt. Közl. Köt. vi.

Rothenbach, J. E. Geologische Studien im Gebiete des Trummletenthals. [Geology of the Trummleten Valley.] *Mitth. nat. Ges. Bern*, nos. 832–834, p. 42. [1874.]

Describes limestone, clay-slate, ironstone-beds, and Glacial Drift.

Rothpletz, A., and E. Dathe. Section Rochlitz. Blatt 60. [Explanation of the Rochlitz Sheet (60) of the Geological Survey of

Saxony.] *Erläut. geol. Specialkarte Sachs.* pp. 76. [1877.] Price 75 pf.

Describe Granulite, Mica-schist, Phyllite, U. Devonian, Permian, L. Trias, L. Oligocene, Drift, and Alluvium, with analyses and woodcuts of sections. A tabular account of 44 boreholes, wells, &c. and of 8 sections in Drift is appended. Contemporaneous igneous rocks occur in the Archæan, Devonian, and M. Rothliegende. W. H. D.

Rütimeyer, Prof. L. L'Homme à Wetzikon. [Man at Wetzikon.] *Arch. Sci. Phys. Nat.* t. lvii. p. 21. [1876.]

The pointed stakes are of human manufacture.

Rütimeyer, Prof. L., and — **Schwendener.** Ueber die Wetzikonstäbe. [The Wetzikon (Inter-glacial Pointed) Sticks.] *Act. Soc. Helv. Sci. Nat.* 1876, p. 286.

Microscopic examination of the stakes shows that the fibres on the surface are across those of the interior, proving human agency.

Rutot, A. Note sur l'Absence de l'Etage Bruxellien sur la rive gauche de la Senne, et sur la Présence, dans les environs de Bruxelles, d'une Division de Diluvium inférieur au Limon Hesbayen. [Absence of the Bruxellian, and Presence of a lower Division of the Drift than the Hesbayan, near Brussels.] *Ann. Soc. Géol. Belg.* t. iv. pp. 39–50, pl. 4 (map). [1877.]

——. [Summary of the 1st fascicule of the Memoir by M. Vanden Broeck on the Antwerp Tertiaries.] *Ann. Soc. Mal. Belg.* t. xi. *Bull.* pp. xviii, xix. [1877.] See Geological Record for 1876, p. 119.

——. Rapport sur l'Excursion Annuelle de la Société Malacologique, 17 Septembre 1876. *Ann. Soc. Mal. Belg.* t. xi. *Bull.* pp. lxx–lxxv. [1877.]

Notes on sections in Eocene and Cretaceous rocks at Boussu, Angre, &c.

Rybár, Stef. [Geological Structure of the Trachyte Mountains of the Left Bank of the Ungh.] *Földt. Közl.* vol. v. [1875.]

Sabatier-Desarnauds, —. Note sur les Terrains secondaires des environs de Béziers. [Secondary Rocks around Béziers.] *Bull. Soc. Sci. Nat. Béziers*, ann. 2, p. 24 [1877].

——. Rapport sur les grottes de Caramaou et de Cabrerolles. [Caves of Caramaou and Cabrerolles.] *Bull. Soc. Sci. Nat. Béziers*, ann. 2, p. 73 [1877].

Sandberger, —. La Forêt Noire. *Arch. Sci. Phys. Nat.* t. lvii. p. 18. [1876.]

Holds that the Black Forest was elevated during the deposition of the Grès bigarré.

Sandberger, Dr. F. Zur Urgeschichte des Schwarzwaldes. *Act. Soc. Helv. Sci. Nat.* 1876, p. 113.

Igneous, Palæozoic, and Triassic rocks described.

——. Gutachten über die geognostichen Verhältnisse der Rhön. [Geology of the Rhone.] 1876.

Refers to lignite, travertine, barytes, basalt, &c.

Saporta, Count G. de. Nouvelles Études sur la Flore de Gélindon. [Flora of Gélindon.] *Compt. Rend. Assoc. Franç.* 5 sess. p. 417; Abstract (9 lines, with Discussion). See also p. 524 (3 lines). [1877.]

——. Sur le climat des environs de Paris à l'époque du diluvium gris, à propos de la découverte du laurier dans les tufs quaternaires de la Celle. [Quaternary Climate of Paris.] Title only in GEOLOGICAL RECORD for 1877, p. 93. *Compt. Rend. Assoc. Franç.* 5 sess. pp. 640–654, pl. xiii. (fossils). [1877.]

Reviews the various opinions as to climate in Quaternary times. Discusses the age and conditions of deposit of the tuffs of La Celle, as shown by the fauna and flora. Concludes that the climate was moist and mild. W. W.

Schaller, —. [Discovery of a Cave near the Galenstock.] *Echo des Alpes*, 1874, p. 186.

The cave contains huge crystals of smoky quartz. One 2 ft. 10¼ inches long and 39 inches round. Another weighed 267 livres.

Schimper, W. P. [Coal-measure Plants in Protogine.] *Rev. deux Mondes*, 1874, p. 458; *Rev. Sci.* 1874.

Annularia sphenophylloides from an erratic block, Mt. Blanc.

Schlüter, Dr. Clemens. Der Emscher Mergel. Vorläufige Mittheilung über ein zwischen Cuvieri-Pläner und Quadraten-Kreide lagerndes mächtiges Gebirgsglied. [Ems Marl (Cretaceous)]. *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. pp. 89–98. [1874.] See GEOLOGICAL RECORD for 1874, p. 94. A letter from **Dr. Dames** is appended.

——. [Cephalopoda of Baltic Cretaceous, &c.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Sitz.* pp. 23–29. [1874.]

Notes on the distribution of *Scaphites*, &c. in the Cretaceous of Bornholm and Denmark, and on pebbles of L. Jurassic and L. Cretaceous in Baltic Drift. W. H. D.

Schlüter, —. [Range of *Inoceramus* in the N. German Cretaceous.] *Verh. nat. Ver. preuss. Rheinl.* Folg. 4, Bd. iv. *Sitz.* pp. 283–290. [1877.]

24 species ranging from Neocomian to U. Senonian. See also GEOLOGICAL RECORD for 1877, p. 93.

Schönaich, Prinz. [Extension of Coal Measures under Cretaceous, N. of the Ruhr Valley.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. 34, *Corr.-Blatt*, pp. 42, 43. [1877.]

Schreiber, Dr. A. Die Fauna des Grünsandes im Gebiete der Stadt Magdeburg. [M. Oligocene, Magdeburg.] *Abh. nat. Ver. Magdeburg*, Heft 5, p. 32. [1874.]

Records *Terebratulina striatula*, a Cretaceous species, from these Tertiary Beds.

——. Die Durchschnitte der Magdeburg-Erfurter Bahn in der Umgebung Heltstedts. [Sections of the Magdeburg-Erfurt Railway.] *Abh. nat. Ver. Magdeburg*, Heft 6, p. 35, map and section. [1874.]

Notes on the L. Zechstein.

——. Die Bodenverhältnisse im Süden Magdeburgs. [Geology of S. Magdeburg.] *Abh. nat. Ver. Magdeburg*, p. 1. [1876.]

Seeland, F. Die geologischen Verhältnisse Kärntens. [Carinthian Geology.] *Jahrb. nat. Landes-Museums Kärnten*, Heft 12. [1876.]

General sketch of the geology, with special reference to economic minerals.

Seguenza, G. Le formazioni terziarie di Reggio in Calabria. [Tertiary, Reggio, Calabria.] *Atti R. Ac. Linc.* ser. 3, *Trans.* vol. i. p. 63. [1877.]

——. Brevissimi cenni intorno le formazioni terziarie della Provincia di Reggio-Calabria. [Tertiary Geology of Reggio-Calabria.] Pp. 31. 8vo. *Messina*, 1877.

Palæozoic, Tithonian, and Cenomanian rocks are followed by Zanclean, Tortonian, and Messinian (Miocene and Pliocene).

Siegert, T., and J. Lehmann. Section Chemnitz. Blatt 96*a* und 96*b*. [Explanation of the Chemnitz Sheets (96*a* and *b*) of the Geological Map of Saxony.] *Erläut. geol. Specialkarte Sachs.* pp. 97. [1877.] Price 1 Mark.

In the N.W. granulite, mica-schist, and slate of the Mittelgebirges, gneiss of Braunsdorf, silurian of Rottluf. In the S.E. slate, L. and U. Coal Measures and Rothliegende of the Erzgebirge. In the marshland, L. Oligocene, Drift, and Alluvium. The M. Rothliegende has contemporaneous [illegible] igneous rocks. Petrological notes, analyses, lists of fossil plants, and woodcuts of sections are given, with a tabular account of 332 borings, quarries, &c. W. H. D.

Sievers, J. Die Flötzlagerung in der Stoppenberger und Horster Mulde. [Geology of Stoppenberg and Horst.] 7 pls. and folio atlas of 3 pls. 4to. *Berlin.* [1874.] 9*s*.

Sintzof, J. [Geological Excursion in the Saratow and Samara Provinces.] In Russ. 1875.

Slavik, A. Ueber die Diluvialgerölle in der Umgebung von Friedland, Gabel und Böhmische Leipa. [Drift-pebbles in Bohemia.] *Sitz. k. böhm. Ges. Wiss.* p. 105. [1875.]

Solitander, C. P. Några geologiska iakttagelser vid en vandring längs Hyvige-Hangö jernvägs-anläggning. [Geology of the Hyvige-Hangö Railway.] 4 pls. 8vo. *Helsingfors.* [1875.]

Sordelli, F. Observations sur quelques plantes fossiles du Tessin méridional et sur les gisements qui les renferment. [Note on the Fossil Plants of the S. Tessin and the Beds containing them.] *Arch. Sci. Phys. Nat.* t. lix. p. 250. [1877.]

On stratigraphical and palæontological grounds opposes the views of Desor and Stoppani on the connection of Pliocene with Glacial deposits. W. H. D.

——. Sur quelques plantes fossiles du Tessin méridional, et sur les gisements qui les renferment, à propos de la Controverse glaciaire. [Beds of S. Tessin with Fossil Plants, and their Bearing on the Glacial-Pliocene Theory.] *Arch. Sci. Phys. Nat.* [1877.]

Spada, —. Cenni storici ed osservazioni geologiche sui terreni di Numana e Sirolo. [Geological and Historical Notes on Numana and Sirolo.] *Osimo*, 1876.

Stache, G. Orientirungstouren südwärts und nordwärts vom unteren Vintschgau. [Geology of the Lower Vintschgau.] *Verh. k.-k. geol. Reichs.* 1877, pp. 205, 206.

Notes on metamorphic rocks.

Stapff, —. Beobachtungen über die Gesteins- Wasser-, und Temperatur-Verhältnisse des Gotthardtunnels in den Jahren 1872–75. [Rock, Water, and Temperature Notes in the St. Gothard Tunnel.] *Mitth. nat. Ges. Andermatt*, 1875, p. 129; *Arch. Sci. Phys. Nat.* t. liv. p. 310 [1875]; and *Act. Soc. Helv. Sci. Nat.* ann. 58, p. 129 [1876].

Describes the rocks penetrated.

Stein, Siegfried. [Glaciation, N. Germany.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Sitz.* pp. 98–100. [1876.]

Describes ice-smoothed rocks and Drift.

Studer, B. [St. Gothard.] *Mitth. nat. Ges. Bern*, 1874, p. 129.

Notes on peculiarities of cleavage.

Stukenberg, Pref. A. [Journey in Petschora Land and the Timan Mountains.] *Mater. geol. Ross.* t. vi. [1875.]

Stukenberg, Prof. A. [Geological Researches on the R. Kama.] *Trudy Obsch. Estest. imp. Univ. Kazan*, knj. vi. p. 1. [1877.]

Refers to Permian conglomerates, &c.

Supan, Dr. Alex. Studien über die Thalbildung des östlichen Graubündens und in de~~n~~r Centralalpen Tirols, als Beiträgezu einer Morphologie der genannten Gebiete. [Valley Formation of E. Grisons and Central Tyrolese Alps.] *Mitth. k.-k. geogr. Ges. Wien*, 1877, p. 293.

The Engadine has been in succession a combe, a valley of fracture, a valley of erosion, a combe, a valley of fracture, a combe, a valley of erosion. Its lakes show its yet incomplete state. The Oetzthal and Venetian valleys are chiefly of erosion. The importance of valleys depends on their antiquity. W. H. D.

Szabó, Dr. Jozsef. Adatok Magyar- és Erdélyország hatarhegysege trachytképleteinek ismertetéséhez. III. Az Erdély Erczhegység. [Typical Trachytes of the Hungarian and Transylvanian Border-Mountains. III. The Transylvanian Erzgebirge.] *Földt. Közl.* köt. iv. [1874.]

The original of the German title entered in the Geological Record for 1876, p. 350.

——. A Salgó-tarjáni Köszénbánya Részvénytársaság Bányászatának Leirása. [Description of the Salgo-tarjani Colliery.] *Math. Természet. Közlem.* köt. xi. pp. 77–94. [1876.]

Geological notes, pp. 84–87. Gives the section (igneous and sedimentary rocks), with lists of fossils and a table of analyses (previously published). W. H. D.

——. Az Abrudbánya-verespataki Bányakerület és különösen a Verespatak-orlai m. kir. Bányatársulati Sz. Kereszt-altárna Monographiája. [Monograph of the Abrud-Banya-Verespatak Mining District, and chiefly of the R. Hungarian Mining School at St. Kereszt.] *Math. Természet. Közlem.* köt. xi. pp. 293–355; map. [1876.]

Geology, pp. 297–298. Petrography, pp. 29~~0~~ 299–310: Dacite [analysis by J. Bernath] and several trachytes. Ore-deposits, pp. 310, 311: Gold and copper. W. H. D.

——. Jelentés Görögországba Tett Geologiai Utazásairól. [Notes on a Geological Journey in Greece.] *Ertek. Természet. Kör.* köt. vii. sz. xiii. pp. 19. [1876.]

Notes on volcanic rocks, &c. of Santorin, Milo, Syra, and Naples.

——. Santorin Sziget Geologiai Történel~~mia~~me. [Geological Sketch of Santorin Island.] *Termész. Közl.* köt. vii. [1876.]

Taramelli, Prof. T. Dei terreni morenici ed alluvionali del Friuli. [Moraines and Alluvium of Friuli.] Pp. 99; 2 pls. *Udine*, 1877.

Amplification of the paper noticed in the Geological Record for 1877, p. 113.

Teller, A. Aufnahmen im oberen Oetz- und Passeierthale. [Geology of the Upper Oetz and Passeier Valleys.] *Verh. k.-k. geol. Reichs.* 1877, pp. 231–235.

Notes on metamorphic rocks.

Thiessing, —. Ueber zwei Höhlen im Jura. [Two Caves in the Jura.] *Mitth. nat. Ges. Bern*, 1876, p. 66.

One, near Delémont, contains bones of arctic animals; the other, at Oberlarg, has pottery, copper articles, &c.

Tietze, Dr. E. Studien in der Sandsteinzone der Karpathen. [Carpathian Sandstone Zone.] 8vo. *Vienna*, 1877.

Tombeck, —. Gisement de l'*Amm. bimammatus.* [Horizon of *Ammonites bimammatus.*] *Bull. Soc. Géol. France*, sér. 3, t. iii. p. 702. [1876.]

Not only in the Corallian but with *A. Babeanus* in the Argovian.

Torcapel, —. Étude des terrains traversés par le chemin de fer d'Alais au Pouzin (section de Robiac au Pouzin). With geol. map (scale 1:40,000) and 3 sections. [1877.] See notice of abstract, p. 115.

Toula, Franz. Geologische Untersuchungen im westlichen Theile des Balkan und in den angrenzenden Gebieten.—IV. Eine geologisches Profil von Osmanich am Areer, über den Sveti-Nikola-Balkan, nach Ak-Palanka an der Nišava. [Geological Researches in the West Balkans.—4. Geological Section over the St.-Nicholas Balkan from Osmanich to Ak-Palanka.] *Sitz. k. Ak. Wiss. Wien*, Bd. lxxv. pp. 465–549, pls. i.–viii. (view, section, fossils); geol. map, woodcuts. [1877.] Parts 1–3 noticed in the Geological Record for 1876, p. 117; 1877, p. 99; Parts 5–7, above, p. 116.

1. Limit of the Sarmatian up to Belogradčik. 2. Dyas at Belogradčik, with an account of the fossils of the Rothliegende. 3. Trias near Belogradčik, with an account of the fossils of the Muschelkalk. 4. From Belogradčik to Cupren; Jurassic beds of Vrbova, with notes on the fossils of the M. Dogger, *Aptychus bulgaricus*, new sp. described. 5. From Cupren over the Sveti-Nikola Pass to Ak-Palanka, with notes on fossils; the new sp. are *Craticularia bulgarica* and *Holocystis similis* (from the *Orbitolina*-schists). W. W.

——. Petrefaktenfünde im Wechsel-Semmering-Gebiete. [Fossil Localities in the Wechsel-Semmering District.] *Verh. k.-k. geol. Reichs.* 1877, pp. 195–197.

Notes on Triassic, Carboniferous, and other fossiliferous deposits.

——. Beiträge zur Kenntniss der "Grauwackenzone" der nördlichen Alpen. [Grauwacke Zone of the N. Alps.] *Verh. k.-k. geol. Reichs.* 1877, pp. 240–244.

Carboniferous, Triassic, and Rhætic rocks noted.

Trenkner, W. [*Parkinsoni*-Beds of Osnabruck and Hellern.] 1. *Jahresb. Osnabr. nat. Ver.* pp. 27–56. [1874.]

——. Neue Aufschlüsse im Jura westlich der Weser. [Jurassic Rocks W. of the Weser.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. pp. 1–16. [1876.]
Notes on the *Parkinsoni*-beds of Hellern, the L. Lias of Löhne, and the Lias of Ruller, dealing chiefly with distribution of fossils.

——. Paläontologisch-geognostische Nachträge II. [Palæontological and Geological Notes.—No. II.] *Verh. nat. Ver. preuss. Rheinl.* Folg. 4, Bd. iv. pp. 283–293, pl. iv. [1877.]
1. Rhætic, Osnabrück. Describes the series, giving a list of fossils. 2. Arietis-zone, Hellern. Gives section. 3. My collection. Notes on fossils, *Gresslya rugosa*, from *Am. polyplocus* zone (U. Senonian), being new. W. H. D.

Tribolet, M. F. de. Sur l'âge des dépôts de gypse de la rive sud du Lac de Thoune. [Age of the Gypsum of the S. Side of Lake Thun.] *Vierteljahrsschr. nat. Ges. Zürich*, 1874, pp. 9, plate.
The Krattigen gypsum is Eocene, probably between the Nummulitic and the Flysch. It is separated from the Jurassic and Rhætic of Spiez by a fault. W. H. D.

——. Les sondages de Rheinfelden. [Rheinfelden Borings.] *Rev. Sci. Suisse*, t. i. p. 44. [1877.]

——. Note sur les roches et minéraux recueillis en Islande et aux îles Färöer par M. le prof. Ph. de Rougemont. [Rocks and Minerals from Iceland and the Faroe Islands.] *Bull. Soc. Sci. Nat. Neuchâtel*, t. xi. cah. 1, pp. 7–12. [1877.]
Gives bibliography and lists of minerals and rocks.

——. Note sur les différents Gisements de Bohnerz dans les environs de Neuchâtel. [Siderolite Deposits near Neuchâtel.] *Bull. Soc. Sci. Nat. Neuchâtel*, t. xi. cah. 1, pp. 24–31. [1877.]
Describes the mode of occurrence of the ore in Neocomian, Portlandian, and Urgonian rocks, and in superficial deposits. Gives an analysis by **A. Klunge.** W. H. D.

Tribolet, M. F., and L. Rochat. Etudes géologiques sur les sources boueuses (Bonds) de la Plaine de Bière (Vaud). [Mud Springs of the Plain of Bière, Vaud.] *Bull. Soc. Sci. Nat. Neuchâtel*, t. xi. cah. 1, pp. 89–122, pl. ii. [1877.]
Describes 25 springs, showing their positions by a map. They are natural Artesian wells rising through muddy and gravelly Drift.

Vacek, M. Ueber Reste von Mastodon aus tertiären Ablagerungen Oesterreichs. [Mastodon from Austrian Tertiaries.] *Verh. k.-k. geol. Reichs.* 1877, pp. 52, 53.
5 species are known.

Vacek, M. Vorlage der Karte der Sette Communi. [On the Geological Map of the 7 Communes, Venetia.] *Verh. k.-k. geol. Reichs.* 1877, pp. 301–305. Translated in *Boll. R. Com. Geol. Ital.* vol. ix. p. 90–94 [1878].

U. Jurassic, Cretaceous, and Eocene rocks are noted.

Vallière, E. de. Quelques mots sur la chute du Tauretunum. [The Tauretunum Landslip.] *Bull. Soc. Vaud. Sci. Nat.* vol. xiv. p. 431. [1876.]

This landslip, which occurred in 563 and temporarily dammed the Rhone, was not due to an earthquake, but was a normal landslip from the Grammont. W. H. D.

Vanden Broeck, E. Seconde note sur le Quaternaire des environs de Paris. Réponse aux observations de M. Hébert. [Reply to Prof. Hébert as to the Paris Quaternary.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 326–328. [1877.]

Distinguishes between Plateau and Valley Drifts, both turned from grey to red by oxidation. The Plateau Drift stones are mostly angular, those of the Valley Drift mostly rounded, except where broken by weathering. W. H. D.

Vasseur, G. Sur les dépôts éocènes de Campbon (Loire-Inférieure). [Eocenes of Campbon.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 166–177. [1877.]

Correlates the deposit with the U. Calcaire grossier, though the fauna, from physical conditions, more nearly approaches that of the underlying Sables Moyens. W. H. D.

Vezian, Al. La France au point de vue géologique et historique. [Geological and Historical Sketch of France.] *Mém. Soc. Emul. Doubs*, sér. 4, t. ix. p. 468. [1874.]

——. Les anciens glaciers du Jura. [Extinct Glaciers of the Jura.] *Ann. Club alpin Franç.* ann. iii. p. 487. [1877.]

Notes the range of erratic blocks, &c.

——. Note géologique à propos d'un débris de roche alpine rencontré sur le Mont-Poupet. [Alpine Block on Mt. Poupet (Pontarlier).] *Bull. Club alp. Franç.* ann. 3. [1877.]

Note of occurrence.

Vinchon, —. [Phosphorite at St. Maurice, Amiens.] *L'Institut*, p. 181. [1875.]

Virlet-D'Aoust, —. Etudes et recherches de gisements de houille dans la vallée de l'Ognon (Hte-Saône) et dans le val de Rougemont (Doubs). [Coal Deposits of Haute Saône and of Doubs.] Pp. 34, pl. 4to. *Paris*, 1876.

Volckmar, —. Geologische Schilderung der Gegend vom Homberg. [Geological Sketch of the Homberg District.] 2 pls. 8vo. *Cassel*, 1877.

Widerin, —. Die Wanderblöcke in Vorarlberg. [Erratic Blocks in Vorarlberg.] *Bot. Tyrol Vorarlb.* nos. 43, 45, 47. [1877.]

Wiik, F. J. Om Skifferformation in Tavastehus län. [Slate Rocks of Tavastehus District.] Plate (section). 8vo. *Helsingfors*, 1874.

——. Om östra Finlands Primitiva Formationer. [E. Finland Primitive Rocks.] Section. 8vo. *Helsingfors*, 1874.

Winter, F. Die Flora des Saargebietes mit einleitenden topographischen und geognostischen Bemerkungen. [Flora of the Saar District, with Geological Notes.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. pp. 273–343. [1875.]

Wolf, H. Die geologischen Aufschlüsse längs der Salzkammergut-Bahn. [Geology of the Salzkammergut Railway.] *Verh. k.-k. geol. Reichs.* 1877, pp. 259–263.

The railway crosses ? Silurian, Triassic, Rhætic, Liassic, Jurassic, Neocomian, Cretaceous, and Tertiary rocks.

Carte Géologique de la France. Notice Explicative. Feuilles 1 & 2, 3–8, 10–13, 18 & 19, 20–22, 31–33, 47–49, 64–66, 79–81, 95, 109. Sheets. *Paris*, 1874.

Short descriptive remarks meant to be stuck on to the maps.

——. Séries Paléontologiques. Bassin Parisien. Planches 1–4. Sheets. *Paris*, 1874. 1 franc each.

Photographic plates of fossils, with a table of the beds in which they occur.

[St. Gothard Tunnel. Monthly and Quarterly Reports of Progress published by the Federal Council, 1874–1877, with Sections.] *Zurich.*

S. end. Quaternary, 37 m.; Dolomitic rocks to 88 m.; Micaschist, quartzite, &c. to 2736 m.—N. end. Gneissic granite, eurite, micaschist, &c. to 2582 m. [Reports from *Annales Industrielles*, translated in *Coll. Guard.*, are entered in the GEOLOGICAL RECORD, 1874 and 1875. See also Clark's summary of the official Reports, noticed in the GEOLOGICAL RECORD for 1875, p. 199, and **Stapff**, above, p. 154.] W. H. D.

3. *ASIA.*

Sub-Editor F. Drew, F.G.S.

Anon. Coal Mines in China. *Coll. Guard.* vol. xxxv. pp. 635, 916. See also *Coal and Iron Trades Gazette,* vol. iv. no. 184, p. 381.

Note on the Shansi coal-field, which contains much brown iron-ore along with the coal.

——. Coal Mining in China. *Coll. Guard.* vol. xxxvi. p. 955.

A seam, 3½ feet thick, was reached at 269 feet in the Government coal-mine of the Kelung district.

——. Geologitcheskoe Opisanie tchastei Signanskago i Tiflisskago Uiezlove Tiflisskoe Gubernii posliedovanniche ve 1877 gody. [Geological Notes on part of the Signach and Tiflis Districts.] 8vo. *Tiflis.*

——. The Formosan Coalfield. *Engineering,* vol. xxv. p. 89; *Coal and Iron Trades Gazette,* vol. iv. no. 175, p. 165.

Hard bituminous coal, 3 to 3½ feet thick, struck at a depth of 265 feet.

——. *Land and Water,* vol. xxv. no. 651.

Notice of the discovery of gold in Wynaad, S. India, in auriferous quartz, to the extent of nine pennyweights a ton. Is worked in the Alpha reef. G. H. K.

——. Mineral Resources of British Burmah. *Journ. Soc. Arts,* vol. xxvi. no. 1314, p. 159.

A notice of a report by the Mining Geologist.

Ball, V. On the Origin of the Kumaun Lakes. *Rec. Geol. Surv. Ind.* vol. xi. pp. 174–182; 2 maps (not geological).

Describes Naini Tal and several other lakes in the neighbourhood; believes them to have a common origin, and that this is *not* glacial.

Blanford, W. T. The Palæontological Relations of the Gondwana System: a reply to Dr. Feistmantel. *Rec. Geol. Surv. Ind.* vol. xi. pp. 104–150.

Examines the arguments brought forward by Dr. Feistmantel with respect to each group of the Gondwana system, and concludes that the attempt to make the Indian groups fit into the grooves of the European sequence is a failure, and that Oldham's plan of abstaining from any attempt at exact correlation is the right one. F. D.

Blanford, W. T. On the Geology of Sind. (Second notice.) *Rec. Geol. Surv. Ind.* vol. xi. pp. 161–173.

The result of two more seasons' work by Mr. Fedden and the author. The beds tabulated are:—Cretaceous; Trap (representative of Deccan and Malwa trap), Ranikot, Khirthar (including the Nummulitic limestone), Nari, Gáj, and Manchhar, which apparently represent the Siwaliks proper. The Cretaceous beds are 1400 feet thick; the beds above, 20,000–30,000. There is here a sequence of later Mesozoic and Tertiary rocks, without any general break; but at the end of the Manchhar period were great movements, these later conglomerates being turned on end. Some speculations follow as to the conditions under which the various beds were formed. F. D.

——. Scientific Results of the Second Yárkand Mission; based upon the Collections and Notes of the late Ferdinand Stoliczka, Ph.D. Geology: pp. 49, woodcut-sections, fol. *Calcutta.*

Contains some papers by Stoliczka which have already been printed (see GEOLOGICAL RECORD for 1874 and for 1875). The new matter consists of two geological itineraries:—From Yangihissár (Káshgar) to Panjáh in Wakhán, by the Little Pámir, and return journey by the Great Pámir; and from Yárkand to Burtsi, by Kugiár and the Karakoram Pass. Blanford contributes a Sketch of the Geology of W. Tibet and a Summary of the information on Central Asia. F. D.

——. On the Geology of the Province of Sind. *Proc. As. Soc. Bengal,* pp. 3–8.

Gives the result of the Geological Survey work.

——. Articles on the Geology of portions of the Bombay Presidency, written for the *Bombay Gazetteer.* 8vo. *Bombay.*

Branfill, B. R. Physiographical Notes on Tanjore &c. *Journ. As. Soc. Bengal,* vol. xlvii. pt. ii. pp. 179–190.

A detailed physical account of the region, which is chiefly delta; contains speculations on the cause of the shifting of the coast-line and of the river-mouths. F. D.

Burton, Capt. R. F. The Gold-mines of Midian, and the Ruined Midianite Cities. A Fortnight's Tour in North-western Arabia. Pp. xvi, 398. 8vo. *London.*

Chapter IX., p. 242, relates how the gold was found in Midian, and describes the gold-mines of Arabia.

——. Midian and the Midianites. *Journ. Soc. Arts,* vol. xxvii. no. 1358, pp. 16–27.

Contains geological allusions.

Cocquet, —. Terrain houiller de l'île de Yesso (Japan). [Coal Formation of Yesso.] *Compt. Rend. Soc. Industr. Min. St. Etienne,* p. 32.

Everett, A. H. Notes on the Distribution of the useful Minerals in Sarawak. *Journ. Straits Branch R. As. Soc.* July, pp. 13–30.

Contains a sketch of the geology of Upper Sarawak, and a statement of the localities of each useful mineral. Gold, iron, coal, antimony, and cinnabar are the most important. It is believed that the diamond-deposits are valuable. F. D.

Everwijn, —. Kolen uit het staatje Analaboe op Sumatra's Westkust. [Coal in W. Sumatra.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. vii. p. 203.

Foote, R. B. Notes on the Representatives of the Upper Gondwána Series in Trichinopoly and Nettore-Kistna Districts. *Rec. Geol. Surv. Ind.* vol. xi. pp. 247–259.

Details of sections in the most southerly outcrop yet found of "plant-beds"; they are sandstone, clays, and shales, resting on gneiss. A list of the plants obtained is given. F. D.

Forsyth, Sir T. D. On the Buried Cities in the Shifting Sands of the Great Desert of Gobi. *Journ. R. Geogr. Soc.* vol. xlvii. pp. 1–17.

Gives some information as to the travelling of the blown sand; it moves from N.W. to S.E., and is possibly brought from the Gobi desert on the east by means of a circular current of air. F. D.

Fraas, Dr. O. Geologisches aus dem Libanon. [Geology of the Lebanon.] *Jahresh. Ver. Nat. Württ.* Jahrg. xxxiv. pp. 258–391; 6 plates of fossils and 9 woodcuts.

Under the following heads:—*Syrian Cretaceous*, Cenomanian: 1. Glandarian zone; 2. Sandstone formation, with coal and bitumen. Turonian: 3. Gasteropod zone of Abeih; 4. Cardium bed; 5. Zone of *Ammonites Syriacus*; 6. Radiolites zone; 7. Slates of Hakel. 8. Marl, with fossil fish of Sâhil Ahna. *Tertiary*: 9. Senonian Marl or White Chalk. *Quaternary*: Water and springs. F. W. R.

Geerts, A. J. C. Les Produits de la Nature Japonnaise et Chinoise. Partie inorganique et minéralogique, contenant la description des minéraux et des substances qui dérivent du règne minéral. Pp. xi, 295; 19 plates. 8vo. *Yokohama.*

Pp. 81–271, Mineral products; pp. 272–294, Appendix on Silicium and Worked Stones; p. 295, "Le Bore."

Gell, F. The Hill Forts of the Deccan. *Good Words*, January, pp. 24–29; 3 illustrations.

Describes the precipitous volcanic rocks on which the forts are built. Among these are porphyry, compact basalt, columnar trap, and laterite. The forts on the Khandor and Kulsubace ranges are then described. A. J. J-B.

Gill, W. J. Travels in Western China and on the Eastern Borders of Tibet. *Journ. R. Geogr. Soc.* vol. xlviii. p. 57, map.

Geological references, p. 91, and through itinerary, pp. 116–172.

Godfrey, J. C. H. Notes on the Geology of Japan. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 542–555, map.

Follows the classification of rocks made by Lyman for the island of Yesso. 1. *New Alluvium*, the silt of the rivers: gold is found in small quantities; and (by the sea-shore) sand of magnetic iron-ore is worked. 2. *Old Alluvium*, similar deposits at a higher level. 3. *New Volcanic Rocks*, basalt, trachyte, and pumice, forming the greater part of the island of Nippon, chiefly from extinct volcanos. 4. *Toshibets Group*, sandstone, clay, and conglomerate, probably M. or L. Tertiary. 5. *Old Volcanic Rocks*: many of the islands are chiefly made up of these; they are mostly rhyolite, and have a gentle dip. 6. *Horimui* or *Coal-bearing Group*. 7. *Kamaikotan* or *Metamorphic Group*, of slate, talcose slate, and mica-schist, chlorite-schist, serpentine, and crystalline limestone. The beds usually have a dip of 60° and more; granite and diorite occur in them. The occurrence of useful minerals is noted in detail. Sections of coal-bearing beds are given. Copper and silver occur in many places. Most of the gold is derived from auriferous silver-ores; but there are some gold-quartz veins. Iron is obtained from magnetic iron-ore, both in the form of sand and massive. Some wells of petroleum have been opened. Other ores occur sparingly. Kaolin occurs extensively. F. D.

Hooze, J. A. Verslag over de artesische drinkwatervoorziening in Groot-Atjeh op de Noordkust van Sumatra. [Artesian Wells in N. Sumatra.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. vii. p. 3.

——. Verslag over de technische uitvoering der artesische putboring in Atjeh. [Artesian Boring in N. Sumatra.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. vii. p. 53.

Hughes, T. W. H. Notes on the Geology of the Upper Godávari basin, between the river Wardha and the Godávari, near the Civil Station of Sironcha. *Rec. Geol. Surv. Ind.* vol. xi. pp. 17–30, map.

Various members of the Gondwána system occur. The Talchír group consists chiefly of sandstones and the boulder bed. The Barákar group contains some coal-beds. The Kámthi group is characterized by porous friable sandstones below and fine-grained sandstones above. The Kota-Maleri group is of clays and sandstones, with a little limestone; remains of fish, reptiles, plants, and a *Unio* have been found. Some ferruginous conglomerates and sandstones, containing iron-ore worked by the natives, are classed as a separate, higher group, under the name of *Chikiála*. F. D.

——. Notes on a Trip over the Milam Pass, Kumaon, with a description of the Fossils by **Dr. Waagen**. *Rec. Geol. Surv. Ind.* vol. xi. pp. 182–187.

A geological itinerary. The formations identified by Dr. Waagen are—Cretaceous, Jurassic, Triassic, Permian, Carboniferous, Silurian.

Keatinge, R. H. Records of the occurrence of Earthquakes in Assam during 1877. *Journ. As. Soc. Beng.* vol. xlvii. pt. ii. pp. 4–9.

A tabulated account of many earthquakes.

King, W. Note on the Progress of the Gold Industry in Wynad, Nilgiri district, Madras Presidency. *Rec. Geol. Surv. Ind.* vol. xi. pp. 235–246.

Gives an account of the operations of the various companies, and tables showing the results.

Lydekker, R. Notes on the Geology of Kashmir, Kishtwar, and Pangi. *Rec. Geol. Surv. Ind.* vol. xi. pp. 30–64, map.

Describes the rocks met with under these headings:—I. Tertiary and Post Tertiary, which form the *Karewas*, or plateaux, of Kashmir. II. Older rocks, namely Silurian, associated with which are some greenstone-like rocks whose origin has been disputed, but which seem to be eruptive. Also Carboniferous, chiefly limestone. III. Section from Islamabad to Palgam, Sind Valley, and N.W. Kashmir: Silurian and Carboniferous; but the latter is of two types, in one part limestone, in the other grits and slates, the two being probably contemporaneous. Trias also appears. IV. Section from Kashmir to Maru Wardwan and Kishtwar. Carboniferous and Silurian (in part quartzite), underlain by and passing into gneiss. V. Section from Kishtwar to Lahúl. From Kishtwar onwards are various metamorphic rocks, which are those underlying the Silurian; but towards Pangi are slates and sandstones. By Salgraon, in the thick-bedded slates, are numbers of imbedded blocks of granitoid gneiss, either angular or waterworn, up to 3½ feet in diameter, extending through 2000 feet of vertical thickness. These were probably ice-borne. VI. Section from Kishtwar to Kashmir. Slates and amygdaloids, like those of the Panjál range; upon which lie greenish slates and sandstones, proved by fossils to be Carboniferous; these seem to replace the Carboniferous of the Kashmir valley. Maintains that Stoliczka's separation of the Gneiss into two will not hold with respect to the localities mentioned; for here it always underlies conformably the (Silurian) slates. Some older gneiss, however, there must have been, to supply the embedded boulders mentioned under V. A table gives an approximate correlation of the Kashmir rock-groups with those of Simla. F. D.

Lyman, B. S. Geological Survey of Japan. Report on the Second Year's Progress of the Survey of the Oil-lands of Japan. Pp. iv, 67. 8vo. *Tôkei.*

Contains a general history of the Survey, and an account of office work. Describes Sagara and other oil-fields; salt-making; mines of silver, gold, copper and iron; and rocks, minerals, and fossils. T. W. N.

Mallet, F. R. The Mud Volcanoes of Rámri and Cheduba. *Rec. Geol. Surv. Ind.* vol. xi. pp. 188–207, plate.

There are about 20 salses or mud-volcanos, either mounds or cones, made up of mud with angular fragments of rock, with one or more vents; they are generally nearly quiet, but occasionally erupt with violence. The source of the mud is the grey shale beneath; it always contains some saline matter, which probably is not from the sea, but from the rocks. At the paroxysmal eruptions flames issue, sometimes rising high; these are from the combustion of marsh gas derived from petroleum in the rock. The volcanos originate in the softening of shale and clay by water, and the ejection of this mud by the pressure of gas slowly generated, and possibly heated by volcanic heat. There is also a connection between the violent eruptions and earthquakes, which may sometimes loosen the overlying rock so as to allow the pent-up gas to force a passage. F. D.

Mallet, F. R. On the Mineral Resources of Rámri, Cheduba, and the adjacent islands. *Rec. Geol. Surv. Ind.* vol. xi. pp. 207–223, maps.

Examined some beds of coal, up to 6 feet thick, most of it crumbly, and not of good quality in point of composition; thinks the prospect of successful mining small. Petroleum, probably derived from the lignitiferous rocks, is got by wells, which either receive it slowly filtering in, or strike a reservoir from which oil and gas rise rapidly; one of the latter kind yielded 1000 gallons a day for 7 days, and afterwards 120 gallons a day. A descriptive table of the wells, with details of the yield, is given. Limestone is plentiful, including recent coral-rock. An alleged discovery of copper is disproved. F. D.

——. Senarmontite from Sarawak. *Rec. Geol. Surv. Ind.* vol. xi. p. 260.

A note of the occurrence of the mineral, associated with native antimony, stibnite, ? volentinite, and cervantite, in a specimen from Saráwak. F. D.

Medlicott, H. B. Annual Report of the Geological Survey of India for the year 1877. *Rec. Geol. Surv. Ind.* vol. xi. pp. 1–17.

Account of the progress of the Survey in different parts of India, with map, and remarks on the geology in each case.

Mouchkétoff, J. Les Richesses Minérales du Turkestan Russe. Pp. 32, geol. map. 4to. *Paris.*

Part 1. Description of the geological characteristics of the formations; their petrographical and mineralogical composition; and their practical value. Part 2. Mineral industry. T. W. N.

Ormiston, G. E. Submerged forest on Bombay Island. *Rec. Geol. Surv. Ind.* vol. xi. p. 302.

Numbers of trees have been found in excavating Prince's Dock, in blue clay, at levels varying from low water spring tides to 12 ft. under, showing the land to have sunk at least 30 ft. A note by **W. T. Blanford**, on the changes of level of Bombay Island, proved by this and by littoral concrete in the W. side. F. D.

Seebohm, H. On his recent Journey to the Rivers Ob and Yenisei. *Proc. R. Geogr. Soc.* vol. xxii. pp. 101–114.

At p. 112 is a note of the occurrence of some beds of sea-shells on the Tundra (500 feet above the sea-level) at Golchoeka.

Tietze, Dr. Emil. Der Vulkan Demavend in Persien. [The Demavend Volcano in Persia.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 169–206.

This volcano has decreased in activity within the memory of man. The present small crater lies within the remains of an old one of great diameter. Ashes are but sparingly ejected, loose blocks and lapilli being the usual ejectamenta. Lava-streams occur, but are not frequent. The eruptive material of which Demavend is formed is trachytic. All its circumstances are opposed to the theory of craters of elevation. G. A. L.

Trotter, H. Account of the Pundit's Journey in Great Tibet from Leh in Ladákh to Lhása, and of his return to India *viá* Assam. *Journ. R. Geogr. Soc.* vol. xlvii.

At pp. 102–104 there is an account of the Gold-fields at Thok Daurákpa. The stone in which the gold is found is quarried, pounded, and washed. The value of the gold brought yearly into Gártokh is estimated at £8000. F. D.

Verbeek, R. D. M. Voorloopig verslag over een geologischen verkenningstocht door de Lampongsche districten en een gedeelte van Palembang, gedaan van juni tot september 1877. [Sketch of the Geology of Lampong, Sumatra.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. vii. p. 185.

Vyse, G. W. Geological Notes on the River Indus. *Journ. R. As. Soc. G. B. I.* vol. x. pp. 317–324.

Notes the amount of sand in suspension. Describes the floods and their deposits, the erosive action of the stream, and the changes of channels. W. W.

Waagen, Dr. W. On the Geographical Distribution of Fossil Organisms in India. *Rec. Geol. Surv. Ind.* vol. xi. pp. 267–301, map.

A translation from the German, by **R. B. Foote.** The German version in *Denkschr. k. Ak. Wiss. Wien,* 1879.

Ward, Thomas. The Salt Lakes, Deserts, and Salt Districts of Asia. *Proc. Lit. Phil. Soc. Liverpool,* no. xxxii. pp. 233–255, map.

Describes the various deposits, and the formation of the Aralo-Caspian district, from which it is inferred that "the Triassic Period was one of great salt-lakes." The map shows where rock salt and brine occur, salt-lakes, supposed outlines of the "Hem Hai" and of the great Asiatic Sea in the Great Ice Age. W. W.

Wynne, A. B. On the Geology of the Salt Range in the Punjáb. *Mem. Geol. Surv. Ind.* vol. xiv. pp. xvi, 313, map (2 sheets) and 31 plates.

Gives an account of former writings on the Salt Range, and a sketch of its physical features. Describes the following formations:— 1. Saline series: marls with rock salt, gypsum, and some dolomite; the salt averages 93 p. c. of sodium chloride; single beds 100 feet thick occur; the total amount of salt in the range is roughly estimated at 10 cubic miles. The age of this series is either Silurian or pre-Silurian. 2. Purple sandstones, 200–400 feet. 3. *Obolus* beds (Silurian): dark shales, in one layer of which some crushed bivalve shells belonging to two species of *Obolus* or *Siphonotreta* were found; thickness 20–150 feet. 4. Magnesian sandstone group: about 200 feet of a rock containing sand, with carbonates of lime, magnesia, and iron. 5. Speckled sandstones, with lavender-coloured clays and some conglomerate. 6. Carboniferous: chiefly grey limestone, also magnesian limestone, shale, and sandstone, with many fossils, among them an Ammonite, called by Dr. Waagen *A. phylloceras*, associated with well-known Carboniferous fossils. 7 and 8. Trias: grey limestones, with *Ceratites* below, and sandstones and clays above; but for the fossils the lower beds would have been classed with the Carboniferous; the upper beds seem to be lacustrine or estuarine. 9. Jurassic: from 200 to 500 feet of sandstones and limestones. 10. Cretaceous: 200 or 300 feet of olive-coloured and white sandstones, with calcareous beds and boulder-conglomerate. 11. Eocene: 500 feet of nummulitic limestone, with carbonaceous shales and thin coal. 12–15. Green-grey sandstones and red clays, and some conglomerates of Nahun and Siwalik age (Miocene and ? Pliocene), some thousands of feet thick. 18. Post-Tertiary and Recent: high-level pebble-beds and alluvium.—Pt. II. is a detailed description of the structure of the ground, with many sections, views, and lists of beds, including an account of the trans-Indus Hills, and a chapter on the economic resources. F. D.

Wynne, A. B. Notes on the Physical Geology of the Upper Punjáb. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 347–375, map.

Most of the matter of this paper is given in *Rec. Geol. Surv. Ind.* vol. x. (see Geological Record for 1877, p. 146), and (as regards the Salt Range) in the above. Through nearly all the extra-Himalayan regions there are indications of land, probably to the S., while in the Himalayan area the marine deposits older than the Tertiary present fewer indications of land. In the W. Himalayan region there was land in early post-Eocene times, the elevation of which gave the first direction to the drainage. Remarks on the evidence of glacial conditions follow. F. D.

——. On "Remarks, &c., by Mr. Theobald, upon Erratics in the Punjáb." *Rec. Geol. Surv. Ind.* vol. xi. pp. 150, 151.

——. Notes on the Earthquake in the Punjáb of March 2, 1878. *Journ. As. Soc. Bengal*, vol. xlvii. pt. ii. pp. 131–140.

An account of the earthquake, with list of localities where it was felt.

See also:—

Abich, H. Mountain Limestone, Armenia: *post*, under INVERTEBRATA.

Lydekker, R. Siwalik Beds of Sind and the Punjáb: *post* under VERTEBRATA.

Tietze, E. On the Valleys of the Elburz Range (Persia): *post*, under PHYSICAL GEOLOGY.

Velain, C. Aden: *post*, under OCEANIA.

SUPPLEMENT FOR 1875–1877.

Abich, H. Ueber einen Hügel bei Digala am Ourmiasee. [A Hill near Digala.] *Verh. k.-k. geol. Reichs.* 1877, pp. 67–69.

Anon. The Precious Metals of the Land of Midian. *London Iron Trades Exchange*, vol. xxi. p. 266. [1877.]
See **Burton, Capt. R. F.**, p. 161.

Baedeker, H. Palestine and Syria. Guide Book for Travellers. Pp. 608. 8vo. *Leipzig*, 1876.
General sketch of geology, pp. 43, 44, and scattered notes.

Bertels, G. A. Kurzer Bericht über den Naphta-District des nordwestlichen Kaukasus. [Naphtha District of N.W. Caucasus.] *Corr.-Blatt nat. Ver. Riga*, Jahrg. xxi. no. 11. [1875.]
Noticed in GEOLOGICAL RECORD for 1877, p. 139, from a reprint.

Blanford, H. F. Note on the Question of the Glacial or Volcanic Origin of the Talchír Boulder-bed of India and the Karoo Boulder-bed of South Africa. *Quart. Journ. Geol. Soc.* vol. xxxiii. *Proceedings*, pp. 7–10. [1877.]
Abstract, with discussion. Rejects both hypotheses. **Prof. Duncan** and **Gen. Strachey** support the volcanic, **Prof. Ramsay** the glacial view. W. H. D.

Blanford, W. T. Dr. Feistmantel's Paper on the Gondwana Series. *Geol. Mag.* dec. ii. vol. iv. pp. 189, 190. [1876.]
A criticism of Dr. Feistmantel's views.

Davidson, George. Abrasions of the Coast of Japan. *Proc. Calif. Ac. Sci.* vol. vi. pp. 28, 29. [1876.]
At Cape Canon and at Oö Sima and the adjacent coast there is evidence of glacial action; only one terrace (100-feet level) could be traced at Oö Sima. R. B. N.

Dijk, P. van. Zwartkolen in en nabij de Baai van Tapaonoelie. [Coal in Tapaonoelie Bay, W. Sumatra.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 3, t. ii. p. 97. [1875.]

——. Ontginbare Kolenlagen in de Ommelanden van Benkoelen. [Coal at Benkoelen, Sumatra. *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 3, t. ii. p. 121. [1875.]

——. Vierde artesische putboring te Batavia op Molenvliet-Oost in de nabijheid der oude stat Batavia. [4th Artesian Well, near Batavia.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 3, t. ii. p. 169. [1875.]

——. Rapport omtrent de Aardhevingen die vooral in Juli 1865 en October 1872 de vlakte van Ambarawa, eiland Java, hebben geteisterd. [Earthquakes in Java.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 4, deel i. p. 71, deel ii. p. 3. [1876.]

Drasche, Dr. A. von. Ueber eine Besteigung des Fusiyama. [Ascent of Fusiyama.] *Verh. k.-k. geol. Reichs.* 1877, pp. 26, 27.
Notes igneous rocks, sulphuretted water, &c.

——. Der Vulcan Iwa-wasi-yama in Japan. *Verh. k.-k. geol. Reichs.* 1877, pp. 74, 75.

Everwijn, R. Mededeeling omtrent het voorkomen van aardolie in het rijke Perlak op Sumatra's-oostkust. [Petroleum at Perlak, E. Sumatra.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 5, deel i. pp. 186, 187. [1876.]

——. Over nieuwe vindplaasten van kolen in de assistent-residentie Bengkoelen, volgens opgave van ambtenaren bij het binnenlandsch bestuuraldaar. [New Localities of Coal, Bengkoelen (W. Sumatra).] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 5, deel ii. pp. 223–241; map. [1876.]

Feistmantel, Dr. O. Geologische Mittheilungen aus Ost-Indien. [Geological Notes from the East Indies.] *Verh. k.-k. geol. Reichs.* 1877, pp. 183–185.
The Kurhurbalee Coal-field, 175 miles N.W. of Calcutta, is L. Triassic (Damuda beds). *Glossopteris* ranges from Trias to M. Jurassic (Panchet group). W. H. D.

——. On the Gondwana Series of India. *Geol. Mag.* dec. ii. vol. iv. p. 188. [1877.]

Fennema, R. Sumatra's Westkust.—Verslag no. 8. Onderzoek naar het voorkomen van kwikerts bij den berg Sombong, in de nabijheid van Sibelahoe, zoomede aan de riviertjes Tapir en Gadé-Talang. [Occurrence of Mercury in W. Sumatra.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 4, deel i. p. 35. [1876.]

Hooze, J. A. Artesische putboring te Kotta-Radja in Atjeh. [Artesian Well, Atjeh (Java).] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 4, deel i. pp. 181–185. [1876.]

Details of section. Analyses of water.

——. De zevende artesische putboring, put no VI. op het Beursplein te Batavia. [Artesian Well, Batavia.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 4, deel ii. p. 209. [1876.]

Hunfalvy, J. [Loess of N. China.] *Természet. Közl.* köt. ix. [1877.]

Lôczy, Lajôs. Az Itacolumit Azsiában. [Asiatic Itacolumite.] *Termész. Füz.* Bd. i. pp. 109, 110. In German, pp. 128, 129. [1877.]

Lopatin, —. [E. Siberia.] *Iswestija Imp. Ross. Geogr. Obsch.* 1876, p. 42.

Notes Carboniferous rocks between Karaulnaja and Ogur, in the Minussink District.

Mansfeldt, H. A. Verslag over een onderzoek naar den stand van de particuliere aardolie-ontginning in de residentie Cheribon, met eenige opmerkingen betreffende de mogelijkheid om aardolie te vinden in de residentie Soerabaja. [Search for Petroleum in Java.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 4, deel ii. p. 183. [1876.]

Mouchkétof, J. Les volcans de l'Asie Centrale. [Volcanos of Central Asia.] *Bull. Ac. Imp. Sci. St. Pétersbourg*, t. xxiii. pp. 70–79. [1877.]

Except possibly Bai-Schan, the reported volcanic action arises from the combustion of coal-seams, probably Liassic, which, with associated ironstone-beds, are described. W. H. D.

Ness [? Walter]. [Indian Explorations.] *Trans. S. Staff. Inst. Eng.* n. ser. vol. iii. pp. 140–144. [1877.]

Two plates of borings are given, apparently showing coal-beds.

Cancel.
Errata p. xxv.

~~**Radan, —.** Les routes de l'avenir à travers l'Asie et les gisements houillers de la Chine. [Future Roads across Asia, and Chinese Coal Beds.] *Rev. deux Mondes*, July 1876.~~

Schelle, C. J. van. Sumatra's-westkust.—Verslag no. 7. Over het voorkomen van looderts aan de rivier Talang, ten zuiden van het dorp Svengei-Aboe, in het district Alahan-Pandjang. [Lead Ore, W. Coast of Sumatra.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 4, deel i. pp. 15–33; 2 pls. (sections and geol. map). [1876.]

—— Mededeeling over het voorkomen van aardolie bij het dorp Kolok, Padangsche Bovenlanden. [Petroleum, Padang Highlands, Sumatra.] *Jaarb. Mijn. Ned. O. Ind.* jaarg. 4, deel i. pp. 188, 189. [1876.]

Schelle, C. J. van. Mededeeling over het voorkomen van koollagen in het beekje Katjang-Pai en bij het voetpad van Kaboen naar Kajoe-Lawon. [Coal Beds on the Katjang-Pai Brook, and between Kajoe and Lawon (Sumatra).] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 6, deel i. pp. 241–244, map. [1877.]

Tietze, Dr. E. Der Vulcan Demavend in Persien. [Mt. Demavend, Persia.] *Verh. k.-k. geol. Reichs.* 1877, p. 41.

Note on the sulphur-beds &c. The rocks near are Jurassic limestone, &c.

——. Das persische Plateau südlich vom Alburs. [Persian Tableland S. of Alburs.] *Verh. k.-k. geol. Reichs.* 1877, pp. 66, 67.

Verbeek, R. D. M. Sumatra's Westkust.—Verslag no. 3. Het Oembilien-kolenveld in de Padangsche Bovenlanden. [The Oembilien Coal-field, Padang Highlands, W. Sumatra.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 3, deel ii. p. 3. [1875.]

——. Ditto no. 4. Over de beste ontginningswijze van een gedeelte van het Oembilien-kolenveld. [Best Method of opening the Oembilien Coal-field.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 3, deel ii. p. 85. [1875.]

——. Ditto no. 5. Geologische Beschrijving van het eiland Nias. [Geology of Nias I., Sumatra.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 5, deel i. p. 3. [1876.]

——. Ditto no. 6. Geologische Beschrijving van het Siboemboen gebergte. [West Coast of Sumatra. Geology of the Siboemboen.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 5, deel ii. p. 51. [1876.]

Vlaanderen, C. L. Scheikundig onderzoek van Bangkatin. [Examination of Banca Tin.] *Jaarb. Mijn. Ned. O.-Ind.* jaarg. 4, deel i. p. 233. [1875.]

4. *AFRICA.*

Sub-Editor E. B. Tawney, M.A., F.G.S.

Anon. Coal at Lake Nyassa. *Coll. Guard.* vol. xxxvi. p. 1022.

Three seams of coal (1, 3, and 7 feet thick) have been found 400 feet above Lake Nyassa, ten miles S. of Florence Bay.

Dunn, E. J. Report on the Stormberg Coalfield. Pp. 36. 4to. *Cape Town.*

Describes the series as (at top) Volcanic rocks, Cave sandstone, Red beds, Coal Measures, and Dicynodont beds (U. Karoo). Dolerite dykes penetrate the whole series. W. H. D.

Fischer, P. Coquilles Quaternaires du Sahara. [Quaternary Shells of the Sahara.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 196, 197.

Note of occurrence. For full description see *post*, INVERTEBRATA. The fossils were collected at Temacinin in the Touareg Country. In the discussion, **M. Vélain** notes having found living marine shore shells in small freshwater lakes, separated from the sea by a sand bar during the dry season, near Cape Houssa, in the Province of Oran (pp. 197, 198). G. A. L.

Jeppe, F. Notes on some of the Physical and Geological Features of the Transvaal. *Journ. R. Geogr. Soc.* vol. xlvii. pp. 217–250, map (not geol.).

Gives a *précis* of the geological researches of Mauch, Hübner, Cohen, and Holub. Mentions as occurring in the Transvaal:—gold in auriferous quartz-reefs and alluvial deposits; copper in several kinds of ore; galena, now being worked; traces of cobalt-glance; iron from magnetic iron, iron-glance, and brown iron ore; and coal, of which a seam 10 feet thick has been found, of good quality. F. D.

Keith Johnston, A. Africa, a Compendium of Geography and Travel, with Ethnological Appendix by **A. H. Keane.** Pp. 611. Maps 16, and numerous illustrations. 8vo. *London.*

Translated with extensions from Hellwalds "Die Erde und ihre Völker." Pp. 10–11, Physical aspect of the continent, map showing elevation of land, ocean-currents, &c.; districts are taken separately, and most contain notes on physical geography. Pp. 66–68, proposed union of the "shotts," and introduction of Mediterranean water into this depressed area. Pp. 72–81, marine origin of the Sahara, sandhills, rock-formations, oases, &c. Pp. 314–320, Victoria Nyanza and equatorial lake system. P. 370, Copper from Keitanya. P. 408, Coal in Orange Free State noticed. Pp. 492–496, Teneriffe island. Pp. 500–502, Madagascar, extinct volcanos numerous. E. B. T.

Klunzinger, Dr. C. B. Upper Egypt, the People and its Products, with preface by **Dr. G. Schweinfurth.** Pp. xv, 1–468. 8vo. *London.*

Notes on the rocks of the Desert mountains, pp. 229–235.

Lenz, Dr. O. Gabbro von der Westküste Afrika's. [Gabbro from the W. Coast of Africa.] *Verh. k.-k. geol. Reichs.* p. 52.

Note of occurrence at Monrovia. According to **Herr John**, the rock consists of plagioclase, with large tabular light-yellow crystals of diallage, and titanite. G. A. L.

——. Geologische Mittheilungen aus Westafrika. [Geological notes from W. Africa.] *Verh. k.-k. geol. Reichs.* pp. 148–153.

Notes Cretaceous rocks (Gault) in the Islands of Corisco Bay, Eocene in Gaboon, crystalline schists in Okota Land, etc., a great volcanic region with 28 craters visible in the Cameroon and Rumbi Mountains, granite and schists with volcanic rocks in Angola and Benguela, Tertiary beds at Ambrisetta, basalt in old Calabar, Gabbro near Monrovia, etc. G. A. L.

——. Ein itabiritähnliches Gestein aus dem Okande Land (West-Afrika). [Itabirite-like Rock in Okande Land, W. Africa.] *Verh. k.-k. geol. Reichs.* pp. 168, 169.

The rock is violet-red, heavy and hard. It consists of a granular schistose mixture of quartz, iron-glance, micaceous iron, and magnetite. Underlying it is a thick deposit of red and white quartzite. G. A. L.

——. Skizzen aus Westafrika. [Sketches from W. Africa.] *Vienna*, 1878.

Contains geological notes.

Maw, George. Sketch of the Geology of Marocco. One of the Appendices to "Journal of a Tour in Marocco and the Great Atlas," by Sir J. D. Hooker and John Ball. 8vo. *London.*

Notes moraines on the Atlas, recent elevation and present subsidence of the coast.

Mullens, J. Recent Journeys in Madagascar. *Journ. R. Geogr. Soc.* vol. xlvii. pp. 47–72.

The text and map contain some geological notes.

Pomel, A. Sur un gisement d'*Hipparion* près d'Oran. [On a *Hipparion* Deposit near Oran.] *Bull. Soc. Géol. France,* sér. 3, t. iv. pp. 213–216.

The age of these beds in Algeria is post-Astesan (Older Pliocene), but pre-Quaternary.

Pomel, A. Géologie de la Petite Syrte et de la région des Chotts tunisiens. [Geology of the Sirtus Minor, and of the Region of the Tunisian Chotts.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 217–224.
Disproves the hypothesis of the ancient presence of the sea in the Chotts as the *Palus tritonidis.*

——. Géologie de la Province de Gabès et du littoral oriental de la Tunisie. [Geology of the Province of Gabez, and of the E. Shores of Tunis.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 501–508.
Describes Cenomanian or Turonian, Neocomian, and Tertiary beds cropping out in places from beneath a vast covering of Quaternary beds. In those parts adjoining Algeria almost all the divisions of the Cretaceous are developed, except the uppermost, the Nummulitic beds covering the N. shore. G. A. L.

——. Algérie. La géologie du Soudan (*suite*). *Rev. Géogr.* no. 39.

Skertchly, J. A. A Visit to the Gold-fields of Wassaw, West Africa. *Journ. R. Geogr. Soc.* vol. xlviii. p. 274.
Geological references, pp. 277, 278, 281.

Tissot, J. Notice géologique et minéralogique sur le département de Constantine (Algérie). [Geological and Mineralogical Note on Constantine, Algeria.] 8vo. *Paris.*

Violle, J. Voyage scientifique en Algérie. [Scientific Journey in Algeria.] *Ann. Club alp. Franç.* for 1877, p. 462.
Touches on many geological subjects.

See also:—

Blanford, H. F. Karoo Boulder-bed: p. 168.

Coquand, W. *Terebratula janitor*, Algeria: p. 128.

Nordenström, G. Iron-ore, Algeria: p. 96.

SUPPLEMENT FOR 1875 and 1877.

Dunn, E. J. Further Notes on the Diamond-fields of South Africa, with Observations on the Gold-fields and Cobalt-mine in the Transvaal. *Quart. Journ. Geol. Soc.* vol. xxxiii. pp. 879–883, folding sheet of sections. [1877.]

Notes on the De Beer, Kimberley, and Du Toit's Pan diamond mines, the Lydenburg and Marabastadt gold diggings, and the Kruis River cobalt-mine (36 miles N. of Middleburg). W. H. D.

Lenz, O. Petrefakten von der Loanga-Küste (West-Afrika). [Fossils from Loanga Coast.] *Verh. k.-k. geol. Reichs.* 1877, pp. 278, 279.

Pomel, A. État actuel de nos Connaissances sur la Géologie du Soudan, de la Guinée, de la Sénégambie et du Sahara. [Geology of Soudan, Guinea, Senegambia, and the Sahara.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 428–448. [1877.]

African geology is simple, on account of the very old and permanent emergence of the greater part of the continent, so that in great part only crystalline and eruptive rocks occur. The paper is an epitome of our geological knowledge of the parts mentioned, with a geological history of the N.E. part of Africa. W. W.

Zittel, K. A. Briefe aus dem libyschen Wüste. [Libyan Desert.] Map. 8vo. *Munich*, 1875.

5. *AUSTRALASIA.*

Sub-Editor R. Etheridge, Jun., F.G.S.

Abbay, Rev. R. On the building-up of the White Sinter Terraces of Roto-Màhànà. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 170–178.

The "White Terrace" of Roto-Màhànà in the N. Island of N. Zealand is produced by the deposition of white silica from the water of a geyser during cooling on its passage to the warm lake of that name. The terraces are really a series of shallow basins, the water flowing over the outwardly inclined edges, and depositing the silica as a flocculent precipitate on the edges and bottoms. Explanatory figures are given. R. E., Jun.

Anon. Gold in Coal Measures of New South Wales. *Coll. Guard.* vol. xxxv. p. 590.

A good deal of gold has been found in the Coal Measures.

——. Coal in South Australia. *Coll. Guard.* vol. xxxv. pp. 795, 878. [From the *Australian and New Zealand Gazette*, Feb. 7.]

Shows from geological data the improbability of finding a coal-field in S. Australia.

——. Iron in New South Wales. *Coll. Guard.* vol. xxxv. p. 906.

The Mittagong ore contains 66 p. c., and the brown hematites of Wallerawang 50 p. c., of metallic iron. A highly ferruginous garnet accompanies the veins of magnetite at the latter place. R. B. N.

——. The Paris Exhibition of 1878. *Coll. Guard.* vol. xxxvi. pp. 293, 294.

An account of the Australian exhibits in "Mining and Metallurgy" of rock, fossils, minerals, metals, and ores, from Victoria, N. S. Wales, S. Australia, and Queensland. R. E., Jun.

——. Boring for Coal. *Coll. Guard.* vol. xxxvi. p. 416.

Notices boring operations at Newington, New South Wales.

——. The Coal Field at West Auckland. *Coal and Iron Trades Gazette*, vol. iv. no. 175, p. 168.

The Brockwell seam is 6½ feet thick, having above it 16 inches of cannel coal.

Anon. Coal Discoveries in South Australia. *Coal and Iron Trades Gazette*, vol. iv. no. 193, p. 613.

Mentions the discovery of a bituminous shale in a well-sinking at Border Town. It yields paraffin on distillation, and has been proved for a thickness of 40 feet at a depth of 91 feet. R. B. N.

Bednall, W. T. Australian Trigonias and their Distribution. *Trans. Adelaide Phil. Soc.* 1877–78, pp. 77–84.

Seven fossil species are known in Australia. Gives a list of Australian Trigonias, recent and fossil.

Christie, W. The Forest Vegetation of Central and Northern New England, in connection with Geological Influences. *Journ. R. Soc. N. S. Wales*, vol. xi. pp. 21–39.

Describes the soils produced by the disintegration of the geological formations of the district, and notices the vegetation occurring on each.

Clarke, Rev. W. B. Remarks on the Sedimentary Formations of New South Wales: illustrated by references to other provinces of Australasia. Ed. 4, pp. 165; 5 pls. (geol. map and sections). 8vo. *Sydney*. Price *2s. 6d.*

A much extended edition of the work noticed in the GEOLOGICAL RECORD for 1875, p. 148. A general account of Australian geology is given, and brought up to date. Many of the author's views are modified. Contains as appendices twenty articles, comprising nineteen lists of Australian fossils, and a Correlation of Australian Fossils, and Systematic Table, by **Dr. O. Feistmantel.** R. E., Jun.

Couchman, T. Geological Survey of Victoria. Report of Progress for the Year 1877, No. 5, pp. x. 215, maps, plans, sections, plates &c. 8vo. *Melbourne.*

Contains:—i. The Progress Report, pp. 1–43, giving departmental information and arrangements for the year.

ii. **R. A. F. Murray.** Geological Sketch map, Sheet 2, South East Gippsland. Report of Progress, pp. 44–70, with views, plans, and sections. The geological formations are described under the headings Post-Tertiary, Tertiary, U. Palæozoic, L. Palæozoic (U. Silurian), and Granite; the gold-workings of the district are described at great length, and a number of plans given.

iii. **F. M. Krausé.** Notes on the Auriferous Leads of M. Pliocene Age of the Creswick Goldfield, pp. 71–78. 12 or 13 leads are fully described.

iv. **Norman Taylor.** Supplementary Notes on the Geological Survey of Learmonth, pp. 78–81. Gives a catalogue of rocks and minerals of the district.

v. **J. C. Newbery.** Report on Specimens of Black Basalt, and Anamesite from Learmonth, pp. 81, 82.

vi. **N. Taylor.** Report on an Outcrop of Granite, East of Buninyong, pp. 82–85. Information on the Lal-Lal Lignite deposit.

vii. ——. Report on the Geological Survey of the Clunes Gold-field, pp. 85–87, with plan. The deep leads of this field are probably continuations of those of the Creswick goldfield.

viii. **F. M. Krausé.** Notes on the Geological Survey of Daylesford, pp. 87–95. The rock formations reported on are L. Silurian, Newer Volcanic, U. Tertiary gold-drifts, and Post-Pliocene.

ix. **R. A. F. Murray.** Report on the Geological Survey of Portions of Dargo and Bogong, pp. 96–111, with geological map and 3 plates of views. The geological formations consist of L. Silurian slates, shales, &c., forming the bed-rock of the whole district, overlain in parts by M. Tertiary sands and gravels, and, where covered by varying thicknesses of lava, forming the plateaux or Dargo High Plains. The highest peaks consist of Palæozoic rocks.

x. **A. W. Howitt.** Examination of Rock specimens collected . . . . . at the Bogong and Dargo High Plains, pp. 111–117.

xi. ——. Notes on the Devonian Rocks of North Gippsland, pp. 117–144, sections, views, &c., plate of rock-sections. A continuation, with modifications of some views regarding the marine limestones of Buchan.

xii. ——. Remarks on Rock samples . . . . . from the Avon River, Mount Wellington, &c., pp. 144–147.

xiii. **F. M. Krausé.** Report on the South extended Suctan Company's Mine, Blackwood, pp. 148–152, plan and section. Quartz veins and drift deposits are described.

xiv. **W. Nicholas.** Remarks on the Geology and Mining Resources of the North Waranga Mining Subdivision, pp. 153–174, sketch map, 2 plans, &c. The mass of the rock formation consists of U. Silurian, with a small patch of granite. Trap and Tertiary alluvium (auriferous) also occur. Notes are added on quartz-mining at Rushworth and at Whroo.

xv. **Prof. F. M'Coy.** Schedule of Reports on Fossil Specimens supplied to the Department of Mines, pp. 174–176.

xvi. **J. C. Newbery.** Laboratory Report: Schedule of Specimens analyzed and reported on . . . . . and Laboratory Notes, pp. 177–190. The "Notes" are on phosphates, lignite, guano, rocks, auriferous ores, and waters.

xvii. **Anon.** Résumé of Operations of Prospecting Parties, pp. 190–215, with map of Victoria showing areas prospected. R. E., Jun.

Crawford, J. C. On Gold in the Wellington Provincial District. *Trans. N. Zealand Inst.* vol. x. pp. 477–480, *Proc.* p. 519.

Describes the quartz-reefs of the mountains from Cook Strait to the Manawater, and announces the discovery of gold in the quartz of this district. Gives suggestions for further prospecting. R. E., Jun.

Daintree, Richard. Note on certain Modes of Occurrence of Gold in Australia. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 431–438, pls. xvii., xviii. (microscopic rock-sections).

The auriferous tracts are of Devonian or U. Silurian rocks penetrated by plutonic rocks. Thinks that most of the auriferous pyrites is contemporaneous with the consolidation of the containing rock. Gold may have been introduced into reefs at different periods. The auriferous veins were chiefly formed during the earliest great volcanic agitation (Devonian). No auriferous vein has been found in any Mesozoic or Cainozoic rocks, nor in any rock erupted through them. Notes 9 different methods of occurrence of gold in E. Australia. W. W.

~~**Enys, J. D.** On Sand-worn Stones from New Ireland. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 86–88.~~

~~Sand being blown across an isthmus wears the stones lying on it into peculiar forms, of which figures are given.~~

Cancel see p. 191

Hector, Dr. J. Colonial Museum and Geological Survey of New Zealand. Twelfth Report for 1876–77. Pp. 55. 8vo. *Wellington.*

Pp. 6, 7 refer to fossils collected at Waikato Heads; from blue clay marls at the mouth of the Waihauau Creek; in the Oamaru district; from many localities in the interior of the Wellington district; and from beds overlying the coal at Whangarei. T. W. N.

——. Colonial Museum and Geological Survey of New Zealand. Thirteenth Annual Report on the Colonial Museum and Laboratory. . . . Pp. 39. 8vo. *Wellington.*

Refers to the great development of the Infra-Triassic marine formation of the Hokanui Range in Southland. The Maitai calcareous slates near Nelson are of the agé of the M. Coal Measures of N. S. Wales. Analyses of coals, minerals, rocks, ores, and mineral waters are given. R. E., Jun.

——. Geological Survey of New Zealand. Reports of Geological Explorations during 1877–78, with maps and sections. Pp. 8, xv, 210. *Wellington.*

i. Progress Report, 1877–78. Deals with general geological summary and notes on certain ores, pp. i–xv.

ii. Report on the Golden Point Quartz Reef, Queen Charlotte Sound, pp. 1–5. The prevailing formation is mica-schist and clay-slate, similar to the schists of the Otago Gold Fields.

iii. Report on the Phœnix Mine, Collingwood, pp. 6, 7. The reef rests on a grey tufaceous sandstone.

iv. Report on the Richmond Hill Mine, pp. 8, 9. Gives mining information.

v. **S. H. Cox.** Report on the Mount Solitary Copper Lode, Dusky Sound, pp. 10–13. The lode occurs in a hornblendic gneiss; the ore is copper pyrites, accompanied by pyrrhotine.

vi. **A. M'Kay.** Report on East Wairarapa District, pp. 14–24. Pliocene strata overlie the U. Miocene limestone of the Wairarapa Valley;

an unconformity is inferred to exist between the Miocene limestones and the Taipo beds; the white limestone at Teawaiti proves to be the Amuri Limestone.

vii. **H. A. Cox.** Report on the Geology of the Hokanui Ranges, Southland, pp. 25–48, map and sections. Gives detailed geological notes, with table of correlated strata.

viii. **A. M'Kay.** Notes on the Sections and Collections of Fossils obtained in the Hokanui District, pp. 49–90. Gives detailed information on the sections, and the occurrence of the various fossils in their component beds.

ix. **A. M'Kay.** Report relative to the Collection of Fossils from the Mount Potts *Spirifer* Beds, pp. 91–109. The sequence of rocks in and around Mt. Potts is as follows:—*a. Rimutaka Series*, of sandstones and shales; *b. Kaihiku Series*, ditto; *c. Great Sandstone Series*, with pebble beds and indications of coal; *d. Cretaceo-Tertiary Series*, with beds of brown coal; *e. Glacial Deposits* of huge lateral and terminal moraines; *f. Recent Alluvium*, fluviatile and lacustrine deposits.

x. **S. H. Cox.** Report on the Geology of the Te Anau District, pp. 110–118. The geological subdivisions in this district are:—*a. Manipori Formation*, consisting of gneiss and mica-schist; *b. Takitimu Series*, or Maitai formation, consisting of grey and green sandstones and slates; *c. Kaihiku Series*, consisting of heavy coarse conglomerates, &c.; *d. Lower Greensand* (Coal formation) and *Cretaceo-Tertiary*, comprising the Amuri Series; *e. Miocene*, of conglomerates, sands, and marls; *f. Glacier deposits*.

xi. **A. M'Kay.** Report on the Wairoa and Dun Mountain Districts, pp. 119–159. Refers both to the geology of the district and to the fossils.

xii. **S. H. Cox.** Report on the Coal Mines of New Zealand inspected during the past year, pp. 160–179.

xiii. **S. H. Cox.** Report on D'Urville Island Copper Mine, pp. 180–186. The chief ore is cuprite, found in a belt of serpentine; copper-glance is also met with.

Appendix I. List of Localities at which the various geological formations have been determined by the discovery of organic remains &c., pp. 189–198. Index to Geographical Distribution of the same, pp. 199–204. R. E., Jun.

Hector, Dr. J. On the relative Ages of the Australian, Tasmanian, and New Zealand Coal-fields. *Trans. N. Zealand Inst.* vol. x. *Proc.* pp. 532, 533.

Gives the following classification:—

CRETACEOUS	Chief N. Zealand Coal.
JURASSIC	Mataura Series of N. Zealand. Cape Paterson Coal-field of Victoria. Clarence R. Coal-field of N. S. Wales. Cove Beds of Hobarton, Tasmania.
LIASSIC	Clenthills Beds of N. Zealand.

TRIASSIC	Wairoa Beds of N. Zealand.
	U. Coals of N. S. Wales.
PERMO-CARBONIFEROUS	Kaihiku Series of N. Zealand.
	Lower Coals of N. S. Wales.
	Mersey Coal-field of Tasmania.

R. E., Jun.

Hector, Dr. J. On the Mercurial Springs of the Bay of Islands. *Trans. N. Zealand Inst.* vol. x. *Proc.* p. 535.

The thermal and mercurial qualities of the springs are not due to any active volcanic influence, but to chemical decomposition. The brown decomposing sandstone containing the deposits of mercury is only a local tufaceous deposit. R. E., Jun.

Hood, T. H. C. New Zealand a Post-Glacial Centre of Creation. *Trans. N. Zealand Inst.* vol. x. pp. 3–24.

Jung, C. E. Beiträge zur Geographie Victoria's. [Victorian Geography.] *Mitth. geogr. Anst.* Bd. xxiv. p. 353.

Contains geological notes.

Liversidge, Prof. A. [On Siliceous and other Deposits from some of the Hot Springs in New Zealand.] *Journ. R. Soc. N. S. Wales*, vol. xi. pp. 262–264.

Notices specimens of the deposits, and photographs of their localities.

M'Kay, A. On the Occurrence of Gold in the Mackenzie Country, Canterbury. *Trans. N. Zealand Inst.* vol. x. pp. 481–484.

Describes the geological structure of the district, and accounts for the small supply of gold from it.

Mactier, A. Notes on the Discovery of Moa Remains at Awitu. *Trans. N. Zealand Inst.* vol. x. *Proc.* p. 552.

Bones, referable to *Dinornis giganteus*, Owen, were embedded in a blue sandy clay, 6 feet from the surface, in a small swamp, 6 miles S. of the mouth of Manukan Harbour. R. E., Jun.

Merivale, George. The Hot Lakes of New Zealand. *Good Words*, pp. 767–771, illustration.

Describes a visit to the hot lake and great geyser of Obmenintu, in the province of Auckland, and mentions the marble terraces [? siliceous sinter] formed by the hot springs falling into Lake Terawera.

A. J. J-B.

Neville, Rt. Rev. Bishop. Presidential Address to the Otago Institute. *Trans. N. Zealand Inst.* vol. x. pp. 562–566.

Geological matters referred to.

Rawlinson, T. E. Notes on the Coast Line Formation of the Western District, and Proofs of the uniform Condition of Meteorological Phenomena over long periods of time. *Trans. R. Soc. Vict.* vol. xiv. pp. 25–34, map.

The sand of the coast-dunes is soluble in acid to the extent of 80 p. c.

Notices the geological features of the coast-line between Warrnambool and Belfast, and how it has been modified by successive outflows from neighbouring extinct volcanoes. Three coast-lines have been formed in succession between Tower Hill and Belfast; and a fourth is now probably forming. R. E., Jun.

Rawlinson, T. E. Subterranean Drainage in the Interior. *Trans. Adelaide Phil. Soc.* for 1877–78, pp. 124–126.

Gives reasons for supposing that large supplies of water exist in and below the Tertiaries of the S.E. part of S. Australia.

Scoular, Gavin. On the Origin of Mineral Veins, with special reference to the Barossa district, South Australia. [Abstract.] *Trans. Adelaide Phil. Soc.* for 1877–78, pp. 75, 76.

Stephens, T. Notes on the Hobart Town Storage Reservoir. *Papers R. Soc. Tasm.* for 1877, pp. 77–80.

Geological remarks on the area between the Derwent and Mount Wellington.

Stewart, J. Observations on the Evidence of Recent Change in the Elevation of the Waikato District. *Trans. N. Zealand Inst.* vol. ix. pp. 35, 36.

The elevation of land is proved in this district by the occurrence of littoral plants 100 miles inland. Depression is shown by the "sunken forest" of the Lower Waikato, consisting of the general forest trees of the present day, and 40 to 50 miles from the sea. Again, on sinking cylinders for the Waikato Bridge, a bed of hard and compact shingle was met with, supposed to be of fluviatile origin, 60 miles from the sea. R. E., Jun.

Suttor, Hon. W. H. Mines and Mineral Statistics. Annual Report of the Department of Mines, New South Wales, for the Year 1877. Pp. v, 212; 2 geol. maps, section, &c. 8vo. *Sydney.* Price 6*s*.

1. **Wood, H.** Annual Report, with Tables, pp. 1–57. Treats of general mining matters of the Colony, yield of gold, coal, tin, copper, iron, silver and lead, antimony; under the first two numerous analyses are given. Contains two sub-reports:—*a.* **E. F. Pittman.** On the Back Creek or Barrington Gold-field, pp. 10, 11. The formation is chiefly Devonian. *b.* **C. S. Wilkinson.** On the depth at which Coal will be found under Sydney, pp. 22, 23. Coal seams may be met with at from 600 to 1,000 feet below the sea level.

2. Wardens' Report, pp. 58–113. Containing a series of reports from the Gold-field Wardens upon the various mining districts.

3. The Mining Registrars' Reports, pp. 114–155. Contains a series of short vertical sections showing the geological structure of certain gold "leads."

4. Report of Inspector of Mines, pp. 155–163.

5. **J. Mackenzie.** Report of the Examiner of Coal-fields, &c., pp. 166–192. Contains many vertical sections of coal-seams.

6. **C. S. Wilkinson.** Report of Progress of the Geological Survey during the year 1877, pp. 197–208. Contains detailed notices of some of the Coal-fields and Gold-fields; the most important of the latter appears to be that of Oberon.

7. **Prof. A. Liversidge.** Report upon Mineral Specimens examined for the Mining Department, during the year 1877, pp. 210–212. Assays and analyses of ores of copper and gold, meerschaum (?), eisenkiesel, and zinc-blende are given.

8. Geological Maps of the District of Hartley, Bowenfells, Wallerawang and Rydal, and of the Oberon District, by **C. S. Wilkinson.**
R. E., Jun.

Tate, Prof. Ralph. Anniversary Address. *Trans. Adelaide Phil. Soc.* for 1877–78, pp. 11–47.

Gives a list of works on South Australian geology, with remarks on the Palæontology, pp. 25–34.

——. Notes on the Correlation of the Coral-Bearing Strata of South Australia, with a list of Fossil Corals occurring in the Colony. *Trans. Adelaide Phil. Soc.* for 1877–78, pp. 120–123.

Contains sections of the strata of the Murray River Cliffs and Aldinga. Gives a list of S. Australian Corals (21 sp.).

Woods, Rev. J. E. T. On the Tertiary Deposits of Australia. *Journ. R. Soc. N. S. Wales*, vol. xi. pp. 65–82, woodcuts.

Gives a general outline of the subject, and compares the deposits of the various areas. Makes remarks on the Brachiopoda, and describes in the briefest manner, as new species—*Rhynchonella cœlata*, M'Coy, *Waldheimia imbricata*, *W. Corioensis*, M'Coy, *Terebratula vitreoides* and *T. Tateana*. R. E., Jun.

——. Palæontological Evidence of Australian Tertiary Formations. *Journ. R. Soc. N. S. Wales*, vol. xi. pp. 113–118.

Does not include raised beaches or newer Pliocene beds. Notes on the Foraminifera, Polyzoa, Corals (few living forms), Echini (few living forms), Mollusca (less than 8 p. c. of living species). Describes the relations of the fauna to the faunas of other lands. W. W.

SUPPLEMENT FOR 1875 and 1877.

Andrä, Prof. [Kerosene Shale, Hartley, N. S. Wales.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Sitz.* pp. 5–7. [1875.]

Note on a specimen.

Anon, —. The Coalfields of Darling Downs. *Queenslander*, Dec. 1, 1877.

Coal is obtainable at Eton Vale, Clifton, Allora, and Jondaryan. The Darling Downs coal beds cover an immense range of country, and contain similar ferns to those of the Newcastle and Wollongong measures in N. S. Wales. R. E., Jun.

6. *OCEANIA.*

Sub-Editor R. Etheridge, Jun., F.G.S.

Anon. The Gold Discovery in New Guinea. *Queenslander,* Jan. 12.

Notices the discovery of alluvial gold and gold-bearing quartz, in river-detritus about 20 miles from Port Morls.

Drasche, Dr. Richard von. Die Insel Réunion (Bourbon) im Indischen Ocean. Eine geologisch-petrographische Studie mit einem Anhange über die Insel Mauritius. [Geology and Petrography of Réunion, and on Mauritius.] 4to. *Vienna.* Pp. vii, 85; 19 pls., 12 woodcuts (2 maps, 15 views, 2 of microscopic rock-sections).

Arranged by routes, etc. Analyses of rocks, by **Prof. N. Teclu.** On the chemical composition of Réunion rocks, pp. 81–85.

——. Fragmente zu einer Geologie der Insel Luzon (Philippinen). Mit einem Anhange über die Foraminiferen der tertiären Thone von Luzon von **Felix Karrer.** [Geology of Luzon, Philippine Islands. With an Appendix on Tertiary Foraminifera by **F. Karrer.**] 4to. *Vienna.* Pp. ix, 99; 5 pls. (maps, rock-sections, view, fossils), woodcuts.

Chemical analyses by **Dr. Berwerth.** **Karrer** describes and figures the following new species:—

Trochammina discoidea.
Verneuilina rotundata.
Ataxophragmium humile.
Clavulina Philippinica.
Gaudryina Draschei.
Bigenerina subtilis.
Quinqueloculina seccans.
Nodosaria semiornata, N. pupæ, N. granulata, N. clava.
Glandulina ornatissima.
Frondicularia bicostata, F. antonina.
Cristellaria vaginata, C. mucronata, C. erinacea, C. hastata, C. falcata.
Uvigerina globosa.
Dimorphina Zitteli.
Bolivina lævigata.
Globigerina Carteri.
Pulvinulina Normanni.
Truncatulina trochoidea.
Rotalia Broeckhiana, R. Manilana.

W. W.

Liversidge, Prof. A. On the Occurrence of Chalk in the New Britain Group. *Journ. R. Soc. N. S. Wales,* vol. xi. pp. 85–91. See Geological Record for 1877, p. 165.

Miklucho-Maclay, N. von. Ueber vulkanische Erscheinungen an der nordöstlichen Küste Neu-Guinea's. [Volcanic Appearances on the N.E. Coast of New Guinea.] *Mitth. geogr. Anst.* Bd. xxiv. p. 408.

Ratte, F. Note sur les roches de la Nouvelle-Calédonie, et Catalogue explicatif de la Collection envoyée à Paris en 1878. [Rocks of New Caledonia.] Pp. 39. 8vo. *Nouméa.*

The hydrosilicates of nickel (Garnierite and Nouméite) are always associated with serpentines containing chromium and nickel. In some places diallage-rocks and diorites occur in the midst of the serpentines; and it has been noticed that the electro-positive metals are generally associated with basic rocks. G. A. L.

Ribourt, —. Observations géologiques sur Tahiti et les îles basses de l'Archipel des Paumotus. [Geology of Tahiti and the Low Islands of the Paumotus Archipelago.] *Bull. Soc. géogr. Paris,* sér. 6, t. xvi. p. 18.

Vélain, Charles. Description géologique de la Presqu'île d'Aden, de l'Ile de la Réunion, des Iles Saint-Paul et Amsterdam. Pp. iv. 360; many plates (4 geol. maps, 1 section, 1 map, 5 views, 7 microscopic sections of rocks) and 46 woodcuts, some not paged. 4to. *Paris.*

Aden, pp. 3–45. Trachytic massif, Basaltic lavas. Réunion, 49–211. Ascent of the Volcano, with *résumé* of the geological constitution of the recent massif; Old massif, with *résumé* of its geological constitution. Isles St. Paul and Amsterdam, pp. 215–236. Isle of St. Paul, 237–327. Geological description, Rhyolitic mass, Basaltic mass, Thermal springs and fumaroles. Amsterdam Is., 328–356. Geological description, Microscopic Study of Lavas. Analyses of rocks, etc. throughout. W. W.

——. Sur la constitution géologique de l'île de la Réunion. [Geology of the I. of Réunion.] *Compt. Rend.* t. lxxxvi. pp. 497–500, 900–902,

SUPPLEMENT FOR 1876, 1877.

Guppy, R. J. L. On the Physical Geography and Fossils of the Older Rocks of Trinidad. *Proc. Sci. Assoc. Trinidad,* pt. xi. pp. 103–110. [1877.]

1. General Considerations. 2. The Fossils of the Caribbean group. 3. The Blue or Compact Limestone.

Hohlenberg, L. S. Nyt undersöisk Krater ved Havaji. [New Submarine Volcano at Hawaii.] *Danske Geogr. Selsk. Tidskr.* Bd. i. p. 137. [1877.]

Notes of a visit to the place during full activity.

Studer, Prof. B. Beitrag zur Geologie von Kerguelensland. [Geology of Kerguelen's Land.] *Mitth. nat. Ges. Bern*, 1877.

Notes lignite, amygdaloid dolerite, &c.

Tchihatcheff, P. de. Considérations Géologiques sur les Iles Océaniques. [Geology of Oceanic Islands.] Pp. 53. 8vo. *Paris*, 1877 [misdated 1878]. Extracted from the French edition of the "Végétation du Globe," by A. Grisebach, t. ii. p. 835.

Describes the orography of the Azores, Madeira, Canary Is., Cape Verde Is., Ascension, St. Helena, Madagascar, Mascarene Is., Seychelles, Sandwich Is., Fiji Is., New Caledonia, Norfolk and Chatham Is., New Zealand, Auckland, Campbell, Galapagos, Juan Fernandez, Tristan d'Acunha, Kerguelen, St. Paul, and Amsterdam Islands; with notes on the rocks, chiefly igneous. W. H. D.

Wolf, Prof. T. [Galapagos Islands.] *Verh. nat. Ver. preuss. Rheinl.* Jarhg. xxxiii. *Sitz.* pp. 25–27. [1876.]

Describes volcanic rocks.

PHYSICAL GEOLOGY.

Sub-Editor F. Drew, F.G.S., Assoc. R.S.M.

1. *PHENOMENA OF UNDERGROUND ORIGIN.*

Abbott, H. L. On the Velocity of Transmission of Earth Waves. *Amer. Journ.* ser. 3, vol. xv. pp. 178–184.

Gives the result of observations on various explosions. Seismometers of high magnifying power give a greater velocity than that recorded by low magnifiers. The tremors produced by gunpowder gradually increase, the first being invisible with the less sensible seismometers. Suggests this cause to account for the discrepancies between his and Mallet's results. The more violent the initial shock the higher is the velocity. This velocity lessens as the general wave advances. The movements are complex, consisting of many short waves, first increasing and then decreasing in amplitude. Discusses Mallet's observations on allet the ~~Willet's~~ Point explosion. F. D.

Airy, Sir George. On the Probable Condition of the Interior of the Earth. *Trans. Cumb. Assoc.* pt. iii. pp. 43–60, plate.

Gives an account of the way in which measurements on the surface of the earth are made. The increase of heat at depths below the surface and its variability are considered; and the nebular hypothesis is explained. The average density of the earth is probably 5½ times that of water, and the densities of Mercury, Venus, and Mars are much the same. Those of the Sun, Jupiter, and Saturn are no greater than that of water. Therefore, assuming the formation of these bodies by condensation of nebulæ, it seems clear that the various parts of nebulæ which have contributed to form our solar system are very different. It is therefore probable that in the constitution of our earth there are parts varying much in density. The higher parts of the Earth are made of something light; the heavy dense parts are those covered by the ocean, and they have sunk deep into the lava of which a large proportion of the central part of the earth is composed. At various places where there are cracks or chinks volcanoes break out, and they are numerous where the crust of the earth is thin. T. V. H.

Bechi, Prof. Emilio. Teorica dei Soffioni boraciferi della Toscana. [Theory of the Borax Soffioni of Tuscany.] *Atti R. Ac. Linc.* ser. 3, *Mem.* vol. ii. pp. 514–521.

Boracite is readily decomposed by steam containing carbonic acid. Carnallite with carbonic and hydrosulphuric acids yields hydrochloric acid, which with limestone produces carbonic acid. The Tuscan serpentines contain boron and metallic sulphides. Hence steam traversing them produces the soffioni. W. H. D.

Chancourtois, A. E. B. de. Moyens simples d'imiter la formation des chaînes de montagnes sur un globe et celle des cirques volcaniques sur un plan, conformément à la théorie des soulèvements. [Imitation of the Formation of Mountain Chains, &c.] *Compt. Rend.* t. lxxxvi. pp. 1091, 1092.

Church, Prof. J. A. The Heat of the Comstock Mines. Pp. 32. 8vo. From *Trans. Amer. Inst. Min. Eng.* vol. viii. 1879. Separate copies printed in advance.

Source of the Heat (with analyses of water); this is referred to chemical action now maintained in eruptive rocks. The temperature has no relation to fixed levels. W. W.

Croll, J. On the Origin of Nebulæ. *Phil. Mag.* ser. 5, vol. vi. pp. 1–14.

Develops his theory that the sun's heat may be due to the collision of two bodies moving in space with great velocity (see GEOLOGICAL RECORD for 1877, p. 347). Reasons are given why nebulæ formed in this way occupy so much space, are of such various shapes, and emit such feeble light. Objections to the theory are met, especially the statement that no star has a motion of more than 40 miles a second; this estimate is shown to have an insufficient foundation. Minor collisions would produce temporary stars; such a collision as would convert the masses into an incandescent nebulous mass from which would be formed a sun to endure for millions of years, and to form the centre of a planetary system, will be of rare occurrence; but there is no improbability in the theory that they have sometimes occurred. F. D.

Darwin, G. H. On the Influence of Geological Changes on the Earth's Axis of Rotation. *Phil. Trans.* vol. 167, pp. 271–312.

Chiefly mathematical. Section IV. On Geological Changes on the Earth's Surface: 17. Areas of Subsidence and Elevation; 18. Amount of Elevation, and the effects of Water; 19. Wide-spread Deformations of the Earth. W. W.

——. On Professor Haughton's Estimate of Geological Time. *Proc. R. Soc.* vol. xxvii. pp. 179–183.

Thinks that Europe and Asia might have been elevated in less than 20,000 years, and yet leave no record in the present motion of the earth, and that Haughton's method fails to give a clue to the question of geological time. W. W.

Daubrée, [A.]. Géologie expérimentale.—Recherches expérimentales sur les cassures qui traversent l'écorce terrestre, particulièrement celles qui sont connues sous les noms de joints et de failles. [Experimental Researches on Joints and Faults.] *Compt. Rend.* t. lxxxvi. pp. 77–83, 283–289, 428–432.

——. Géologie expérimentale.—Expériences tendant à imiter les formes diverses des ploiements, contournements et ruptures que présentent les terrains stratifiés. *Compt. Rend.* t. lxxxvi. pp. 733–739, 864–869, 928–931.

This and the above are practically an abstract of the author's large book on the subject.

Daubrée, [A.]. Expériences relatives à la chaleur qui a pu se développer par les actions mécaniques dans l'intérieur des roches, particulièrement dans les argiles; conséquences pour certains phénomènes géologiques, notamment pour la métamorphisme. [Heat due to Mechanical Action in the Interior of Rocks, especially Clays; Metamorphism produced thereby.] *Compt. Rend.* t. lxxxvi. pp. 1047–1053, 1104–1110.

Duncan, Prof. P. M. On the Formation of the Main Land-Masses. *Proc. R. Geogr. Soc.* vol. xxii. pp. 68–98.

A lecture, showing the connection of geography and geology. The features and composition of the continents are described, then the old history of the land-masses. As to the cause of their production, the author agrees with the theory of contraction of the earth by secular cooling, and the production of curves in the crust. F. D.

Dunker, G. Ueber die Beobachtungen zur Ermittelung der Wärme des Erdkörpers. [Determination of the Heat of the Earth's Crust.] *Zeitschr. ges. Nat.* Folg. 3, Bd. iii. pp. 340–343, 345–347.

Everett, Prof. Tenth Report of the Committee to investigate the Rate of Increase of Underground Temperature. *Rep. Brit. Assoc.* for 1877, pp. 194–199.

Observations made at Schemnitz, Hungary, show a mean increase of 1° F. for 74 feet. Observations in holes bored upwards for 10 feet from deep seams in Boldon Colliery between Newcastle and Sunderland give 1° F. for 37 feet to 49 feet. Observations made by the Geological Survey of India (see *Rec. Geol. Surv. Ind.* vol. x.) are discussed. Makes remarks on the plugs invented for boreholes, to prevent convection. F. D.

Fuchs, Dr. C. W. C. Die vulkanische Ereignisse des Jahres 1877. [Volcanic Events of 1877.] *Min. petr. Mitth.* Bd. i. pp. 106–136.

Thirteenth Annual Report. Records eruptions of Vesuvius and of Cotopaxi, of volcanoes in Ooshima and Nazuyama (Japan), and in California. One submarine eruption near Pisagua in Peru. 109 earthquakes on 101 days recorded. In winter (Dec.–Feb.) 33; spring (March–May) 31; summer (June–Aug.) 12; and autumn (Sept.–Nov.) 33. A few others recorded in an Appendix. F. W. R.

Fuchs, K. Les Volcans et les Tremblements de Terre. [Volcanoes and Earthquakes.] Ed. 2. Map. 8vo. *Paris.*

Geinitz, E. Das Erdbeben von Iquique am 9. Mai 1877 und die durch dasselbe verursachte Erdbebenfluth im grossen Ocean. [Earthquake at Iquique, 9 May, 1877, and its consequent Ocean Wave.] *Nova Acta Ac. Cæs. Leop.-Car.* t. xl. pp. 383–444; 3 plates. See also Götting. gel. Anz. p. 558.

A collection of observations along the W. coast of S. America and in the Pacific Ocean, with discussion of the results.

Groeger, F. Bemerkungen über die Erscheinungen der Erdbeben und der vulkanischen Ausbrüche. [Phenomena of Earthquakes and Eruptions.] *N. Jahrb.* Heft ix. pp. 928–940.

On eruptions of Cotopaxi, and on the connexion between a low state of the barometer and the occurrence of earthquakes. Refers also to Algeria, Lesbos, Carinthia and the Pyrenees.

Hann, Dr. J. Temperatur im Gotthard-Tunnel. [Temperature in the St. Gotthard Tunnel.] *Zeitsch. österr. Gesell. Meteor.* Bd. xiii. no. 2.

The mean rate of increase was 1° C. in 45 metres. The mean rock-temperature in the tunnel was 32°·8 C. ± 1·51.

Hartley, W. N. Report on the Conditions under which Liquid Carbonic Acid exists in Rocks and Minerals. *Rep. Brit. Assoc.* for 1877, pp. 232–236.

A résumé of results from the observations, under the following heads:—Critical point of carbonic acid; motion of bubbles in fluid-cavities under the influence of heat; vibrating bubbles and the Brownian movement; continuity of the gaseous and liquid states of matter as shown in certain specimens; on the temperature of formation of rocks and minerals. F. D.

Haughton, Rev. Samuel. Notes on Physical Geology.—No. III. On a new Method of finding Limits to the Duration of certain Geological Periods. *Proc. R. Soc.* vol. xxvi. pp. 534–546.

Almost wholly mathematical. Gives a table of the thickness of the geological strata in Europe (total over 110,000 feet), and gives the minor limit of geological time as 11,700,000 years. W. W.

——. Notes on Physical Geology.—No. V. Mr. George H. Darwin's Comments on Note III. *Proc. R. Soc.* vol. xxvii. pp. 447–450.

Controversial and mathematical.

Hennessy, H. On the Limits of Hypotheses regarding the Properties of the Matter composing the Interior of the Earth. *Phil. Mag.* ser. 5, vol. vi. pp. 263-267, and *Amer. Journ.* 1879, ser. 3, vol. xvii. pp. 461–465.

The reasonings of Sir W. Thomson and Mr. Darwin on the tidal action of an internal fluid on its solid containing shell are vitiated by the assumption of an incompressible fluid and an elastic, and therefore compressible, solid. A highly compressible liquid contained in a much less compressible shell would be a hypothesis more in harmony with observation. Hence the objections raised to the idea of an internal incandescent fluid beneath the solid crust of the earth do not hold. F. D.

Herschel, A. S., and G. A. Lebour. Fourth Report of the Committee on Experiments to determine the Thermal Conductivities of Rocks. *Rep. Brit. Assoc.* for 1877, pp. 90–97.

Describe the variations in the year's experiments from the former ones. Give a table of the observed conductivities, a comparison with the previous observations, and remarks on certain rocks and on the conductivity of water as affecting rocks saturated by it. F. D.

Höfer, H. Erdbeben am 12. und 13. Dec. 1877. [Earthquake of Dec. 12, 13, 1877.] *Verh. k.-k. geol. Reichs.* pp. 82–85.

Describes the attendant phenomena.

Hoernes, R. Erdbeben-Studien. [Earthquake Studies.] *Verh. k.-k. geol. Reichs.* pp. 169–172. and Jahrb. k.-k. geol. Reichs. Bd. xxviii. p. 387.

Divides earthquakes into three classes, those caused by natural subterranean excavations, volcanic earthquakes, and such as must be regarded partly as landslip-phenomena and partly as attempted volcanic eruptions. G. A. L.

Lasaulx, Dr. A. von. Das Erdbeben von Herzogenrath am 24. Juni 1877. [The Earthquake of Herzogenrath of June 24, 1877.] 8vo. *Bonn.* Pp. 77. See also *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. p. 467.

Observations and statistics leading to the determination of the elements of the earthquake. Form of propagation linear, connected with the direction of a fault in the Coal-Measures of the Wurm district. The superficial centre of the shock lay S.E. of Pannesheide. Mean velocity of propagation of shock 3·85 miles (Germ.) a minute, or 474·83 metres a second. Depth of seismic focus 3·664 miles (Germ.), as mean of 6 values. Intensity = 240·25, or 2·6 times less than that of the earthquake in the same district in 1873. F. W. R.

Le Conte, Prof. Joseph. On the Structure and Origin of Mountains, with special reference to recent objections to the "Contractional Theory." *Amer. Journ.* ser. 3, vol. xvi. pp. 95–112.

Ranges (distinguished from mountains formed by erosion or volcanic action) are always due to horizontal pressure. The thrusting of beds formed on marginal sea-floors against older rocks of the continents causes them to rise and be pushed over landwards (*e. g.* the Sierra Nevada). The earth's crust, if separated in places only from the neucleus by a semi-liquid zone, can undergo this horizontal thrust. Contraction may be partly due to escape of originally held (non-meteoric) water, as shown by Fisher (see the GEOLOGICAL RECORD for 1875, p. 387). The thickness of off-shore deposits, raising the isogeotherms, forms a line of softening of the crust, and hence of weakness. W. H. D.

Longe, F. D. On the Relation of the Crust to the Interior of the Earth. *Midl. Nat.* vol. i. pp. 216–219.

Remarks on internal heat, oscillations, and laws of solidification.

Mallet, F. Rate of Earthquake-wave Transit. *Phil. Mag.* ser. 5, vol. v. pp. 358–362.

Remarks on Gen. Abbot's paper (see p. 187). Considers that the discrepancies in the results of the Hallet's Point observations are not reconcilable by taking into account the difference in the magnifying power of the seismoscopes there employed; especially points out that the velocity recorded for shingle is far greater than is possible in a discontinuous material, and concludes that some undiscovered source of error existed. F. D.

Milne, Prof. J. On the Form of Volcanoes. *Geol. Mag.* dec. ii. vol. xv. pp. 337–345, pl. ix.

Naumann, Dr. Edmund. Ueber Erdbeben und Vulkanausbrüche in Japan. [Earthquakes and Volcanic Eruptions in Japan.] *Mitth. deutsch. Ges. Nat. Ost-Asiens*, Heft 15, August.

Nordenström, G. Enkelt sätt att deducera en generel formel för beräkning af förkastningar. [General Formula for determining Faults.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 207-209.

Reyer, Dr. Edward. Vulkanologische Studien. *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 81–92; 2 figs.

Discusses the different behaviour of acid and basic magmas in volcanic vents, and describes the phenomena presented by imperfectly fluid lavas, which are not ejected as scoriæ, but accumulate around volcanic orifices as massive lava cones. J. W. J.

——. Zur Tektonik der Eruptivgesteine. [Physics of Eruptive Rocks.] *Verh. k.-k. geol. Reichs.* p. 402.

Announcement of results obtained experimentally by pressing plaster of Paris through an opening in a board at various inclinations, &c.

Sandberger, Dr. F. Ueber vulkanische Erscheinungen. (3 papers.) 8vo. *Würtemberg.*

Streng, Dr. A. Beitrag zur Theorie des Plutonismus. [Plutonic Theories.] *Min. petr. Mitth.* Bd. i. pp. 40–48, woodcut.

Traces the formation of the globe from a glowing fluid spheroid surrounded by gaseous envelope. As temperature fell an upper light layer of molten acid silicates was formed upon a lower dense zone of basic silicates, an intermediate mixture being produced by diffusion. Further reduction of temperature formed an outer solid shell; but it is argued that the interior may consist of a solid nucleus with a succession of alternate liquid and solid shells between this nucleus and the outer crust. F. W. R.

——. Ueber die Theorie des Vulkanismus. [Volcanic Theories.] 17 *Ber. Oberhess. Ges.* pp. 117, 118.

Summary of the views of Tschermak and Kant.

Toula, F. Ueber vulkanische Berge und den Vulkanismus. [Volcanoes and Vulcanicity.] Pp. 49. 8vo. *Vienna.*

Travers, W. T. L. Remarks as to the cause of the Warmer Climate which existed in high Northern Latitudes during former Geological Epochs. *Trans. N. Zealand Inst.* vol. x. pp. 459–469, *Proc.* pp. 524–526.

Considers that the heat radiated from the interior by the globe affected the climate of the earlier periods of the Earth's history.

——. Further Remarks as to the cause of the Warmer Climate which existed in high Northern Latitudes during former Geological Epochs. *Trans. N. Zealand Inst.* vol. x. pp. 470–474, *Proc.* p. 531

A consideration of the views advanced by Croll and Duncan.

Twisden, J. F. On Possible Displacements of the Earth's Axis of Figure produced by Elevations and Depressions of her Surface. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 35–45.

Examines the question, stated by Evans, to what extent an elevation of N. Africa to a height of 4000 feet would affect the position of the Earth's axis of rotation. Concludes that the displacement would be less than 10′, and that it would be as much as 10° or 15° only if the elevations and depressions exceeded by many times the heights of the highest mountains. F. D.

Waters, A. W. Influence of the Position of Land and Sea upon a Shifting of the Axis of the Earth. *Rep. Brit. Assoc.* for 1877, *Sections*, pp. 77, 78.

As land and sea are unequally distributed, the movements of elevation and depression of the land in one part of the globe do not balance those of another part. Any submarine elevation displaces water, which is spread over the oceanic area; and the effect of this would be to displace the pole along the line 52° E. long. W. T.

Wilson, Dr. A. Movements of Land. *Good Words*, Nov. 1878, pp. 775–784; 3 illustrations.

Describes the formation of coral reefs and the relations of sea and land. Gives instances of earth-movements, as the Temple of Jupiter Serapis, terraces, raised beaches, and fiords. Speaks of earthquakes and causes of land-movements. A. J. J-B.

See also:—

Heim, A. Mechanics of Mountain-formation: p. 76.

SUPPLEMENT FOR 1875–1877.

Dijk, P. van. Verhandeling over de wet der geothermische progressie. [Scale of Geothermal Progression.] *Jaarb. Mijn. Ned. O.-Ind.* jg. 4, deel ii. p. 81. [1876.]

Dorn, Ernst. Beobachtungen der Station zur Messung der Temperatur der Erde in verschiedenen Tiefen im botanischen Garten zu Königsberg i. Pr. Januar bis December 1875. [Measurement of Earth Temperatures.] *Schrift. phys.-ökon. Ges. Königsberg*, Jahrg. 17, *Abhandl.* p. 77. [1877.]

Duponchel, —. Explication des Phénomènes de Dislocation du Globe terrestre par le fait de l'inégale Attraction du Soleil à la Surface des ses deux Hémisphères. [Alteration of the Earth's form through the unequal Attraction of the Sun at the two Hemispheres.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 281–292. [1877.]

To "explain the phenomena of deformation, sudden or continuous, that the earth's crust undergoes, in the present geological period, through the inequalities of solar attraction." The vertical pressure of deformation would have its greatest intensity near the 36° parallel, a latitude in which earthquakes and tidal irregularities are frequent. Applies the same considerations to the deformations of earlier geological periods.

W. W.

Heim, A. Ueber den Mechanismus der Gesteinsumformung. [Mechanics of Rock-deformation.] *Vierteljahrsschr. nat. Ges. Zürich*, Bd. xxii. p. 115. [1877.]

Deals with contortion, cleavage, slickensides, &c.

Hunfalvy, J. [Risings and Fallings of the Earth's Crust.] *Természet. Közlöny*, Bd. ix. [1877.]

Lasard, Dr. [Recent Researches as to Earth-Temperature.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Corr.-Blatt*, pp. 49, 50. [1875.]

Lasaulx, Dr. A. von. Zu Mallet's Theorie der vulkanischen Kraft. [Mallet's Theory of Volcanic Energy.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Corr.-Blatt*, pp. 38–44. [1876.]

Perry, John, and **W. E. Ayrton.** On a Neglected Principle that may be employed in Earthquake Measurements. 8vo. *Yokohama*, 1877.

Toula, F. Ueber die verschiedenen Ansichten über das Innere der Erde. [Hypotheses of the Interior of the Earth.] *Schrift. Ver. nat. Kenntn. Wien*, Bd. xvi. p. 585. [1876.]

2. *SURFACE PHENOMENA.*

Baines, A. C. On the Influence of the Earth's Rotation on Rivers. *Trans. N. Zealand Inst.* vol. x. pp. 92–96.

Holds that the changes in the river-courses are due to unequal velocities of surface and bottom layers of running water.

Barstow, R. C. Anniversary Address to the Auckland Institute, 28th May, 1877. *Trans. N. Zealand Inst.* vol. x. pp. 545–550.

Refers to matters connected with Glacial geology.

Carruthers, J. On the Formation of detached Shingle Beaches. *Trans. N. Zealand Inst.* vol. x. pp. 475–477, 530.

The travel of sand and shingle along a sea-coast is due to the breaking of the waves on the beach more or less obliquely. Gives, as examples of detached beaches in N. Zealand, the spit of sand at Cape Farewell, Nelson Harbour, and Lake Ellesmere. R. E., Jun.

Enys, J. D. On Sand-worn Stones from New Zealand. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 86–88.

Describes the form given to stones lying in an isthmus between two lines of sand-hills by the sand driven from one set of dunes to the other.

Feilden, H. W. Some Remarks on Inter-Glacial Epochs, in reference to fauna and flora existing at the present day in the Northern Hemisphere, between the parallels of 81° and 83° N. *Proc. R. Dublin Soc.* n. ser. vol. ii. pt. i. pp. 42–44, and *Journ. R. Geol. Soc. Ireland*, n. ser. vol. v. pt. i. p. 46.

Considers "the theory of intercalation of series of warmer climates during what is called the Glacial Epoch."

Forbes, H. O. Rain and River. *Geol. Mag.* dec. ii. vol. v. pp. 212–214.

Geikie, Dr. James. On the Preservation of Incoherent Materials under Till or Boulder Clay. *Geol. Mag.* dec. ii. vol. v. pp. 73–79. 287, 288.

The ice-sheet would move rapidly and with denuding action in a hilly country; over low ground it would have a slow and equable motion, and near its limits would override other deposits. Illustrations are given from the Hebrides and Lake Ontario. W. T.

Girard, J. Considérations sur les transformations littorales. [Coast Changes.] *Bull. Soc. Géogr. Paris*, sér. 6, t. xv. p. 452.

Haughton, Rev. S. On the Total Annual Heat received at each point of the Earth's Surface from the Sun; and on the amount of the loss of that heat caused by radiation into space (neglecting the effect of the atmosphere). *Proc. R. Dublin Soc.* n. ser. vol. ii. pt. i. pp. 92–100, and *Journ. R. Geol. Soc. Ireland*, n. s. vol. v. p. 21.

Contains chiefly mathematical calculations, some of which bear slightly on the geological work done by rain and rivers.

Hay, O. P. An Examination of Prof. Leo Lesquereux's Theory of the Origin and Formation of Prairies. *Amer. Nat.* vol. xii. pp. 299–305.

A criticism of the views published by Lesquereux in the first vol. of the Geological Survey of Ohio.

Heim, A. Ueber die Karrenfelder. [Terraces.] *Jahrb. schweiz. Alpenclub*, Bd. xiii. p. 421.

These are formed by solution of limestone, not by glacial action.

Hind, H. Y. The Mechanical Effect of Arctic Ice in producing Ocean Currents. *Canad. Nat.* n. ser. vol. viii. no. 7, pp. 417–424.

"If, owing to a gradual up-rising or depression of the land area within the Polar circle, an increased or diminished quantity of Polar ice should be produced, the mechanical effect would be strongly felt in opposite directions, according to the character of the oscillation. These supposed conditions may have thus greatly influenced Arctic climate during past geological ages." R. B. N.

Kjerulf, Th. Die Eiszeit. [The Glacial Epoch.] *Samml. gemeinverständl. wissensch. Vorträge von R. Virchow u. Fr. v. Holzendorff*, H. 293, 294.

Lenz, O. Ueber polirte Felsen in den Betten einiger afrikanischer Ströme. [Polished Rocks in the Beds of African Streams.] *Verh. k.-k. geol. Reichs.* pp. 101–103.

In most African rivers the rocks exposed to the stream are covered with a thin bright varnish-like coating of oxide of iron. Accounts for this by the supposed action of grains of quartz from the general drift-covering of the country carried by the rapid rivers and rubbing the iron-ore (which occurs in large masses in the Drift) into the rocks. G. A. L.

Lovett, E. The Glacial Period, and its Bearings on Physical Phenomena. 8 *Rep. Croydon Micr. Club*, pp. 17–24.

Niles, Prof. W. H. Upon the Relative Agency of Glaciers and Sub-Glacial Streams in the Erosion of Valleys. *Proc. Boston Soc. Nat. Hist.* vol. xix. pp. 330–336; *Amer. Journ.* ser. 3, vol. xvi. pp. 366–370.

From observations on the Aletsch glacier, concludes that the glacier-streams deepen and widen the valleys in advance of the ice, which modifies their contour afterwards. W. H. D.

Péroche, J. Les causes des phénomènes glaciaires et torrides. Justifications. [Causes of Glacial and Tropical Phenomena.] Pp. 57, 2 plates. *Paris.* See GEOLOGICAL RECORD for 1877, p. 181.

Pickwell, Robert. The Encroachments of the Sea from Spurn Point to Flamboro' Head, and the works executed to prevent the Loss of Land. *Proc. Inst. Civ. Eng.* vol. li. pp. 191–212, pl. 4; 8 woodcuts.

The rate of loss varies, amounting in places to over 5 yards a year. The woodcuts show the manner in which the waste takes place. The low cliffs are chiefly sand and gravel on Boulder Clay. The material goes to increase Spurn Point, which is gaining 6 yards a year; and it also silts up the Humber. W. T.

Reade, T. M. Chemical Denudation in relation to Geological Time. 8vo. *London.* Price 2s. 6d. ? Reprint from *Proc. Liverpool Geol. Soc.* See Geological Record for 1877, p. 182.

Reusch, Hans H. Jaettegryder, dannede af Elve. [Giants' Kettles produced by Rivers.] *Nyt Mag. Nat.* Bd. 24, H. 3, pp. 337-343; 7 woodcuts.

Struckmann, C. Ueber den Einfluss der geognostischen Formation auf den landschaftlichen Charakter der Gegend. [Influence of Geological Formations on Scenery.] 27-28 Jahresb. *Hanover.*

Tietze, Dr. Emil. Einige Bemerkungen über die Bildung von Querthälern. [Formation of Transverse Valleys.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 581-610.

Calls attention to the way in which rivers cut across some of the highest ridges of the Alburs or Elburz Mountains in Persia, and discusses the origin of these and other transverse valleys. Discards the notion that these valleys are vents torn open during the upheaval of the mountain-ranges, and puts forward the following explanation of their origin. In many cases when a river breaches a mountain-chain it takes its rise in a district which was dry land while the rocks of the chain were being deposited. The upper part of the river then is older than the mountain-range; as the rocks of that range were slowly raised out of the water, the river prolonged its course over the addition thus made to the dry land; and, as they were step by step elevated into a mountain-range, the river continued its channel deeper and deeper into them. Instances among other examples those of the Indus and the Brahmapootra, which cut across the highest mountain-chain in the world. These rivers take their rise on the slopes of the Karakorum and Kuenlun ranges, both far older than the Himalayas. The Kuenlun was an important mountain-chain at the end of the Silurian period; the upheaval of the Karakorum is of Triassic date; the ground on which the Himalayas stand was beneath water till the end of the Eocene. Then the upheaval of the Himalayas began, and as they rose the streams which had been flowing over the old land surface N. extended themselves S., and cut valleys across the rocks as they slowly rose into mountains. A. H. G.

Todd, Prof. J. E. Notes on the Distribution of Timber in South-western Ohio, with Inferences concerning the origin of Prairies. *Amer. Nat.* vol. xii. pp. 91-96.

Deals with the causes which give rise to prairies.

Ussher, W. A. E. On Terminal Curvature in the South-western Counties. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 49–55.

Combats Mackintosh's views as to the origin of this. Suggests these causes:—the great contortions of the old rocks, especially near faults; the action of frost in wedging the laminæ into new positions; the intrusion of roots as wedges. F. D.

Wood, S. W. Subglacial Origin of Till. *Geol. Mag.* dec. ii. vol. v. p. 335.

In reply to Dr. J. Geikie, see above, p. 195.

Young, Prof. John. What must be Explained before the Preservation of Deposits under Till is Explained. *Geol. Mag.* dec. ii. vol. v. pp. 162–164.

Asks how it is possible for 100 feet of till to accumulate under an ice-sheet some 2000 feet thick.

See also:—

Endlich, Dr. F. M. Erosion-Products, Colorado: *post,* under AMERICA.

SUPPLEMENT FOR 1874–1877.

Anon. (E. D[esor].) Ueber Riesentöpfe und deren Ursprung. [Origin of Giants' Kettles.] *Sonntagsblatt des "Bund" Bern,* no. 50. [1874.]

Regards giants' kettles as formed, after the retreat of glaciers, by torrents influenced in their course by glacial detritus.

Bonney, Rev. T. G. On Mr. Helland's Theory of the Formation of Cirques. *Geol. Mag.* dec. ii. vol. iv. pp. 273–277. [1877.]

Regards cirques as formed by streamlets rather than by glacial action.

Campbell, J. F. The Parallel Roads of Lochaber. Pp. 28. Privately printed. 8vo. *London,* 1877.

The chief headings are Lakes, Ice Dams, Raised Coasts, Parallel Coasts and Shoals, Raised Sea Margins, Beach Marks, Raised Coasts in Cheshire, Round Lochaber, Through Lochaber 1877 (pp. 12–21). Evidence. Regards the roads as old coast-lines. W. W.

Clayton, J. E. The Glacial Period.—Its Origin and Development. *Proc. Calif. Ac. Sci.* vol. vi. pp. 123–131. [1876.]

Discusses some of the theories to account for the great changes in the climate at the close of the Tertiary age. Gives a brief survey of the physical geography of the continents during Tertiary times. R. B. N.

Dakyns, J. R. The Supposed Glacial Origin of Carboniferous Terraces. *Geol. Mag.* dec. ii. vol. iv. pp. 17, 18. [1877.]

Similar terraces (to those supposed to be of glacial origin) undulating with the bedding occur in the unglaciated districts of Derbyshire, &c.

Fessenmayer, J. De la Perméabilité des Roches par l'Eau et de la Formation des Sources. [Permeability of Rocks and Origin of Springs.] *Bull. Soc. Hist. Nat. Colmar*, p. 271. [1876.]

Grad, —. Erosion glaciaire. [Glacial Erosion.] *Neue Alpenpost*, Bd. iii. p. 256. [1876.]

Glaciers protect rocks from stream and weather action, merely removing slight inequalities of the surface. They cannot erode lakes.

Gurlt, Dr. [Giants' Kettles, and their Direct Formation by Glaciers.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Sitz.* pp. 32–35. [1876.]

Heim, A. Antheil der Gletscher bei Bildung der Thäler. *Vierteljahrsschrift nat. Ges. Zürich*, Bd. xx. p. 205. [1875.]

Opposes the hypothesis of the glacial erosion of valleys and lakes.

Hunt, Dr. T. S. The Disintegration of Rocks, and its Geological Significance. *Proc. Amer. Assoc.* vol. xxiii. [1875.]

Lóczy, Lajós. [Rapid Valley Erosion in the Bihar Mts.] *Földt. Közl.* [1877.]

Mohr, Prof. Origin of the Glacial Period. *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Sitz.* pp. 166–168. [1875.]

Moss, Dr. E. L. On Glaciation by Sea Ice. *Proc. R. Irish Acad.* ser. 2, vol. iii. pp. 50, 51. [1877.]

Remarks on ice-grooves observed in the Arctic Expedition, 1875–76.

Sottaz, H. Les Blocs Erratiques. *Rev. Sci. Suisse*, April 1877.

Studer, B. [Formation of Karrenfelder.] *Jahrb. schweiz. Alpenclub*, Jahrg. ix. p. 545. [1874.]

Repudiates their formation by glaciers, referring them to the action of peat-bogs or forests.

3. *ROCK-FORMATION.*

Cagnacci, —. Del movimento delle arone nella formazione della spiaggie e dune del mare. [Travelling of Sand and Formation of Beaches and Dunes.] *Riv. Sci.-ind.* October.

G. R. Die Delta, Ihre Morphologie, geographische Verbreitung und Entstehungs-Beding

Credner, ~~H.~~ [Delta formation.] *Mitth. geogr. Anst.* Erg. no. 56.

Fuchs, Th. Zur Frage der Aptychenkalke. [The Aptychus Limestone Question.] *Verh. k.-k. geol. Reichs.* pp. 167, 168.

Draws attention to an old observation of Caper's, quoted by Le Hon in 1870, that in "beds abounding in Aptychi, they, with oysters and *Anomiæ*, alone are found, the shells of the other fossils having been dissolved away." G. A. L.

Grand'Eury, —. Mémoire sur la formation de la Houille. [Formation of Coal.] *Compt. Rend. Assoc. Franç.* 1877, pp. 517–525.

The reduction in volume sustained by plants in their change into coal is not so great as supposed, not more than a half. The formation of coal-seams must therefore have been more rapid than has been believed. Facts are given in support of this proposition. G. A. L.

Green, Prof. A. H. The Geology of Coal. *Keighley News*, Feb. 10.

Report of 2 lectures on the origin of coal and associated rocks.

Inkey, Bela von. [Formation of Loess.] *Földt. Közl.* köt. viii. sz. 1.

Jeffreys, Dr. J. G. Address to the Biological Section of the British Association. *Rep. Brit. Assoc.* for 1877, *Sections*, pp. 79–87.

Deals with the question of the mode of formation of the White Chalk. Concludes that the Mollusca of the Chalk are comparatively shallow-water forms, indicating a depth of 40 to 50 fathoms. None of the Cretaceous genera are deep-water. H. A. N.

Ochsenius, C. Beiträge zur Erklärung der Bildung von Steinsalzlagern und ihrer Mutterlaugensalze. [Formation of Rock-salt.] *Nova Acta Ac. Cæs. Leop.-Car.* t. xl. pp. 121–166.

Cites, in support of his earlier views, experiments by Usiglio on the order in which deposits from sea-water are formed. Discusses the origin of gypsum, as a common associate of rock-salt. A gulf, cut off from the open sea in a bar, favours deposition of salt free from gypsum. Small proportions of sulphate of lime in salt-deposits may be due to the high temperature of the water. Mud falls rapidly from warm concentrated saline solutions. Concretions of borates in easily-soluble salts indicate rapid deposition. F. W. R.

Renard, A. Les organismes de l'Océan et leur action en Géologie. [Organisms in the Ocean and their Geological Action.] *Revue des Questions Scientifiques*, pp. 508–547.

Shaler, Prof. N. S. The Silver Question Geologically considered. *Atlantic Monthly* and *West Rev. Sci. Ind.* vol. ii. pp. 101–104.

Rocks deposited in sea-water contain the metallic salts held in solution; these taken up by heated water are re-deposited in veins nearer the surface. W. H. D.

Shrubsole, G. W. Origin of Rock Salt. *Proc. Chester Soc. Nat. Sci.* no. 2. pp. 13–21.

Gives the result of evaporating sea-water, and discusses the mode of formation of the marl and rock-salt beds of Cheshire.

Toula, F. Die Korallenriffe. [Coral Reefs.] Pp. 40. 8vo. *Vienna.*

Wethered, E. Formation of Coal. *Proc. Bristol Nat. Soc.* n. ser. vol. ii. pp. 192–207.

Notes the chemical composition of coal, and the organic remains found in the Coal Measures. Gives the results of analyses of 3 specimens of coal, showing the proportion of ash, fixed carbon, and volatile matter in them. Discusses the conditions under which coal might be formed, and how the several varieties were produced. The matters brought down by rivers during the coal period variously affected the vegetation which they covered up. H. B. W.

Williamson, Prof. W. C. On the Microscopic Conditions of a Slab from the Mountain Limestone of Bolland. *Proc. Manch. Lit. Phil. Soc.* vol. xvii. pp. 70–74.

Treats of the origin of the rock, from Foraminiferous ooze to the deposition of crystallized carbonate of lime.

See also:—

Abbay, Rev. R. Building-up of Sinter Terraces, New Zealand: p. 176.

SUPPLEMENT FOR 1874-1877.

Engelhard. Die Entstehung der Steinkohlen. [Origin of Coal.] *Schrift. Ver. nat. Kenntn. Wien*, Bd. xiv. p. 29. [1874.]

Fuchs, T. Ueber die Kräfte, durch welche die Meeressedimente von der Küste gegen die Tiefe zu bewegt werden. [Transportation of Marine Sediment from the Coast to the Deep Sea.] *Verh. k.-k. geol. Reichs.* 1877, p. 225.
Shows by diagrams the formation and destruction of beach-material.

Jentzsch, Dr. A. Ueber Baron v. Richthofen's Lösstheorie. [Richthofen's Theory of Loess.] *Verh. k.-k. geol. Reichs.* 1877, pp. 251-258.
Attributes all Loess to alluvial action (Ueberschwemmungen).

Pošepny, Fr. Zur Genesis der Salzablagerungen, besonders jener im nordamerikanischen Westen. [Origin of Rock Salt, especially in Western N. America.] 8vo. *Vienna*, 1877.

Tietze, Dr. E. Ueber Lössbildung und über die Bildung von Salzsteppen. [Formation of Loess and Salt Steppes.] *Verh. k.-k. geol. Reichs.* 1877, pp. 264-268.
Reply to Dr. Jentzsch, see above and in the GEOLOGICAL RECORD for 1877, p. 186.

APPLIED AND ECONOMIC GEOLOGY.

Sub-Editor W. Topley, F.G.S., Assoc. Inst. C.E.

Anon [Ω]. An Examination of the Figures and Statements published as to the Result of the Analyses of Professor Frankland, on the London Water Supply in 1876 and 1877. Pp. 28. *London.* 8vo. Price 1*s.*

Maintains that the existing supply is good and sufficient. Gives tables of analyses, including those of water supplied to Birmingham and Glasgow. W. T.

——. Catalogue des échantillons de matériaux de construction réunis par les soins du Ministère des Travaux publiques. [Catalogue of Specimens of Building-stones, etc., in the Paris Exhibition.] 8vo. *Paris.*

The stones are chiefly French.

——. Mineral Resources at Constantinople. *Journ. Soc. Arts,* vol. xxvi. no. 1352, pp. 947, 948.

A notice of a Report by **Vice-Consul Wrench.** Iron-ores are abundant, rich, and especially valuable on account of their freedom from phosphorus and sulphur. Coal also occurs. W. W.

——. [**F. W. Rudler.**] The Mineral Wealth of Wales. *Coll. Guard.* vol. xxxv. p. 714.

Abstract of a lecture to the Society of Cymmrodorion.

——. Lancashire Mineral Output. *Coll. Guard.* vol. xxxv. p. 954.

Statistics of the minerals raised in Lancashire in 1877.

——. Ostrau-Karwiner-Steinkohlen-Revier in Oesterreich. Production und Circulation der Kohle pro 1876. [Statistics of Coal for 1876 relating to the Ostrau-Karwin Coalfield in Austria.] *Teschen.*

——. The Chemistry of Building Materials. *Building News,* vol. xxxiv. April 12, p. 361.

Ansted, Prof. D. T. On Rivers and their Relation to Public Health. *Ann. Rep. Soc. Med. Off.* 1877-1878, pp. 17-25.

The proportion of the rainfall which swells the rivers varies with the absorbent character of the rocks and the season. Some rivers are largely fed by springs. The amount of mineral impurity varies with the solubility of the constituents of the rocks. Water from shallow wells or springs in populous places is dangerous. Where sewage does not directly reach a river the water may be sufficiently purified by natural oxidation. T. V. H.

Barron, F. C. The Works of the Bilbao Iron Ore Company in the Province of Biscay, Spain. *Proc. Inst. Civ. Eng.* vol. li. pp. 237–262, pls. 7 & 8.

The ore is a hard brown hæmatite. Gives 5 analyses of ore from the Galdames district: 54·2 to 57·2 p. c. of iron; phosphoric acid 0 to 0·03. The mines of the Somorrostro district yield 3 varieties of ore:—Campanie, or red hematite (50 to 55 p. c. of iron); Vena dulce, a rich soft ore (54 to 62 p. c.): and rubia or red hematite (52 to 58 p. c.). W. T.

Bateman, A. H. Emery and Corundum Wheels for Grinding, ... &c. *Journ. Soc. Arts*, vol. xxvi. no. 1322, p. 362.

Notices deposits of corundum, p. 363.

Binnie, A. R. Water-Supply, Rainfall, Reservoirs, Conduits and Distribution. Lectures delivered at the School of Military Engineering, Chatham. Privately Printed. Pp. viii, 48; 38 plates. Fol. *Chatham.*

A few geological notes scattered throughout. Pl. vii. section of strata under Yarrow Reservoir, Liverpool Water Works. W. T.

Boaden, W. Hydrogeology. *Trans. Barrow Field Club*, vol. ii. pp. 26–31.

A short introduction to the subject.

Boulger, Prof. Geology for Gardeners. *Gardeners' Chronicle.*

Brauns, D. Die technische Geologie, oder die Geologie in Anwendung auf Technik, Gewerbe und Landbau. [Technical Geology.] Pp. xii, 400; 80 woodcuts. 8vo. *Halle.*

Brogden, J. On Coal Washing. *Proc. S. Wales Inst. Eng.* vol. x. pp. 119–135; Discussions, pp. 206–217, 266–274; 7 plans.

Table A shows the relative proportions of shale, &c. to coal, and shale to coke.

Cameron, Dr. C. A. On the Inconstant Composition of Well Waters. *Analyst*, no. 31, p. 337.

The composition often varies at different levels; a remarkable instance is at Glenfarme Hall, near Enniskillen. Analyses given.

Cochran-Patrick, R. W. Early Records relating to Mining in Scotland. Pp. lxv, 205. 4to. *Edinburgh.*

The introduction describes the first discovery and working of gold, silver, lead, coal, &c. in Scotland.

Collins, J. H. Lode Mining in the West of England. *Rep. Brit. Assoc.* for 1877, *Sections*, pp. 201, 202.

The average produce is less than 4 p. c. for copper-ores and less than 2 p. c. for tin-ores: the more vertical parts of lodes are generally the richer, the wider lodes richer than the narrower, those dipping towards granite richer than those dipping away from it; the bearing of the best lodes averages E. and W. magnetic. W. T.

——. The China Clay Industry of Cornwall and Devon. *Pop. Sci. Rev.* n. ser. vol. ii. pp. 133–140.

China Clay is produced by the decomposition of a white granite, in which the white felspar is more or less metamorphosed into kaolin; this granite is always crossed by quartzose and schorlaceous veins. Gives a description of the varieties of China Clay, their uses, and statistics of production. W. T.

Davies, D. C. A Treatise on Slate and Slate Quarrying, scientific, practical, and commercial. Pp. xvi, 186. 8vo. *London.* Price 6*s.*

Describes the position and order of the materials of the earth; the mineral composition of slate rocks; analyses of slates; colouring matter; cleavage; geological structure of N. Wales, &c.; history and working of slate-quarries. T. W. N.

Decaisne, Dr. E. De l'étiológie tellurique du Choléra. [Etiology of Cholera.] *Compt. Rend.* t. lxxxvi. pp. 570, 571.

Résumé of conclusions, published elsewhere, on the geological distribution of cholera, with special reference to the Lyons district.

Demmler, A. Boring Shafts, &c. in Westphalia. *Trans. Manch. Geol. Soc.* vol. xiv. pp. 374–391, plate.

Describes the sinking of cylinders to a depth of 96 yards through watery grey marls, resting on Coal Measures, at the Rhine Elbe Pit of the Dahlbusch Colliery; 9000 gallons of water a minute were pumped. C. E. R.

Dickenson, Joseph. The Spontaneous Combustion of Coal. *Trans. Manch. Geol. Soc.* vol. xiv. pp. 393–395.

Combustion is generally due to bands of earthy matter associated with the coal-seam rather than to the coal itself; when this earthy matter is removed the coal is fit for export. C. E. R.

Grover, J. W. Report on the New Water-Supply at Newbury. *Trans. Newbury Field Club*, vol. ii. pp. 246–248.

From a well only 14 feet deep, through alluvium and gravel, to chalk.

Guedes, Octavio. L'Industrie minière au Portugal. [Mining Industry in Portugal.] *Lisbon.*

Henderson, R. Manual of Agriculture; including the Application thereto of Chemistry, Geology, Botany, Animal Physiology, and Meteorology. *Roy. Highland Agricultural Society's Prize Essay.*

Huber, —, and — Lommel. [The Simplon Tunnel.] *Mém. Soc. Ing. Civ.* pp. 574–614. (Abstract in *Proc. Inst. Civ. Eng.* vol. lvi. pp. 308–311.)

Notes of rocks to be traversed.

Hunt, Robert. Mineral Statistics of the United Kingdom of Great Britain and Ireland for the year 1877. Pp. xvi, 245. 8vo. *London.* Price 2*s.*—See also an analysis of above, "Our Underground Wealth," *Leisure Hour*, pp. 125, 126.

[Jones, Prof. T. R.] Water-Supply at Greenham. *Trans. Newbury Field Club*, vol. ii. p. 248.

From a well, 20 feet deep, through gravel and sand to London Clay?

Latham, Baldwin. Indications of the Movement of Subterranean Water in the Chalk-Formation. *Rep. Brit. Assoc.* for 1877, *Sections*, pp. 207–216, pl. v.

Describes the Chalk near Croydon. As a rule, the flow of subterranean water conforms to the surface falls of the country; but there are exceptions. Water rises in wells near the top of a valley earlier than in the lower part; this is due to a greater rainfall. Pp. 210–216 give a schedule of well-gaugings. The Plate gives sections showing the water-line in the chalk in December 1876 and June 1877, and a map showing the direction of underground drainage. W. T.

Lefebvre, R. [On the Nature of Soils, and on Slips in Clay Soils.] *Ann. Ponts Chaussées*, t. xvi. p. 390. Abstract in *Proc. Inst. Civ. Eng.* vol. lv. pp. 338–341; 3 woodcuts.

Describes and illustrates the mode in which slips take place, and the means to be adopted to prevent them.

Le Grand, Alfred. Tube Wells. *Trans. Inst. Surveyors* for 1877, pp. 133–142; Discussion, pp. 142–148.

Various wells briefly mentioned.

Leuschner, —. [Remarks on the methods of working in English Collieries.] *Zeitsch. Berg- Hütt. Salinenw.* Bd. xxvi. p. 70 B.

Discusses the different systems of working coal in English collieries, with illustrations.

Mallard, —. Avantages des explorations superficielles pour l'étude des gîtes. [Advantages of Surface Surveys.] *Compt. Rend. Soc. Industr. Min. St. Etienne.*

Paramelle, Abbé. L'Art de découvrir les Sources. [The Art of Discovery of Springs.] Pp. xx, 428. 8vo. *Paris.*

Petermann, A. Seconde Note sur les Gisements de Phosphates en Belgique et particulièrement sur celui de Ciply. [Belgian Phosphates.] *Mém. cour. Ac. R. Belg.* (8vo) t. xxvii. art. 3, pp. 40.

Gives analyses of the "pierres dures" and the "tuffeau" of Ciply, and the results of the use as manure of the Grey Chalk, of superphosphate prepared from it, and of precipitated bicalcic phosphate. The last is the best manure, and the only form in which the phosphoric acid of the Grey Chalk of Ciply can be advantageously employed. W. H. D.

Rousille, —. [Composition of the Polder Soil of the Quatre-Salines in Mt. Saint-Michel Bay (Normandy.)] *Ann. Agron.* t. iii. p. 431.

Detailed analysis. The soil is very fertile after it has been unsalted. It had yielded 25 crops without any manure.

Rowe, T. T., and Dr. C. Le N. Foster. Observations on Balleswidden Mine. *Trans. R. Geol. Soc. Cornw.* pp. 8, pl. i.

A tin-mine in granite near St. Just-in-Penwith.

Serlo, A. Leitfaden zur Bergbaukunde. Ed. 3, 2 vols. 23 pls. 8vo. *Berlin.*

Struppelmann, L. Die Petroleum-Industrie Österreichs Deutschlands, dargestellt zur Darstellung deren Wichtigkeit und Zukunft und zur Aufklärung des für diese Industrie sich interessirenden Capitals in geschichtlicher, geologisch-bergmännischer, wirthschaftlicher und technischer Beziehung. Abth. iii. Deutschland. [Austro-German Petroleum Industry.] Pp. 254, plates. 8vo. *Leipzig.*

Sutcliff, Robert. Tube Wells for Large Water-Supplies. *Trans. Inst. Surveyors* for 1877, pp. 149–158; Discussion, pp. 158–169.

Mentions various wells, chiefly in the Cretaceous and Tertiary rocks of S.E. England, and in New Red Sandstone.

Tidy, Dr. C. M. The London Water Supply: being a Report submitted to the Society of Medical Officers of Health on the Quality and Quantity of the Water supplied to the Metropolis during the past ten years. Pp. 70. 4to. *London.*

A reprint of the monthly analyses for 10 years, 1868–77, with average tables and explanations.

Ure, —. Dictionary of Arts, Manufactures, and Mines. Ed. 7. Vol. iv. Supplement. Edited by **R. Hunt.** Pp. vii, 1020. 440 woodcuts. See GEOLOGICAL RECORD for 1875, p. 262.

Usill, G. W. Rural Sanitation. *Trans. Inst. Surveyors* for 1877, pp. 113–125; discussion, pp. 125–132.

Water Supply, pp. 119–125.

Wanklyn, Prof. On the Water-Supply of Towns. The East Anglian Handbook and Agricultural Annual for 1878. *Norwich.*

Waring, H. J. The Drainage, Irrigation, and Cultivation of the Albufera of Alcudia, Majorca . . . . . . *Proc. Inst. Civ. Eng.* vol. lii. pp. 243–249.

Notes on the soil of the district.

Wheeler, W. H. Arterial Drainage and the Storage of Water. *Journ. Roy. Agric. Soc.* ser. 2, vol. xiv. pp. 1–60.

Some geological notes and section (fig. 1, p. 11.)

Wigner, G. W. The Water Supply of Sea-Side Watering-Places. An examination into the Character of the Water Supply at the Watering-Places of England and Wales. Being a series of Reports prepared for and published in the 'Sanitary Record' during 1877–78. Pp. iv, 234; 3 tables of analyses. *London.* 8vo.—Also, in a shorter form, alphabetically arranged (by names of places) under the title of "Sea-Side Water, an Examination . . . ." Pp. iv, 43, and tables. 8vo. *London.* Price 1*s.*

The Water-Supply of 105 towns described, with notes of sources of supply, and above 200 analyses (190 tabulated at the end). To the larger work are appended:—I. the Exeter Water Supply, pp. 201–

204; II. the outbreak of Typhoid Fever at Baxenden and Accrington, considered in connection with the Water-Supply, pp. 205–210. W. T.

Wilson, George. Irrigation in the South of France: Department of the Bouches-du-Rhône. *Proc. Inst. Civ. Eng.* vol. li. pp. 213–236, plates 5 and 6 (5 is a map).

The Durance has an ordinary low water flow of about 2,540 cubic feet a second; it carries about 17,000,000 tons of sediment a year. The sediment contains more than 40 p. c. of carbonate of lime. Analyses of sediment (by **Dr. A. Voelcker**) and of water (by **Paul de Gasparin**) are given. W. T.

[Mineral Produce of Prussian States in 1877.] *Zeitschr. Berg-Hütt. Salinenw.* Bd. xxvi. p. 7. Abstract in *Proc. Inst. Civ. Eng.* vol. liv. p. 374.

National Water Supply. Notes on Previous Inquiries. (*Soc. Arts.*) Pp. vi, 108, xxviii. 8vo. *London.* Price 1*s.* 6*d.*

Catalogue of Reports, Papers, &c., pp. 1–27. Information from many of these publications is collected under the following heads:—The connection between Drinking Water and Health; the Choice of Water; Examination of Water; Water-supply of Rural districts and small Towns; Water-supply of the Metropolis; some Engineering considerations; Origin and History of Official Inspection. W. T.

National Water Supply. Report of Congress at Society of Arts, London, May 21 and 22, 1878. *Journ. Soc. Arts*, vol. xxvi. pp. 639–662 (Discussion), pp. 694–706, 737–745, 757–760, 767–774, 775–784 (Papers), pp. 761–767 (Replies to Queries from Sanitary Authorities, &c.). Reprinted in 8vo. *London.* Pp. iv, 80. Price 2*s.*

The papers bearing mostly on geology, and the geological aspect of the question, are by **C. E. De Rance**, **Dr. J. Evans**, **J. Lucas**, and **Prof. J. Prestwich.** W. T.

Reports of the Inspectors of Mines .... for the Year 1877. Pp. xxiv, 469; plans. Fol. *London.* (Price 13*s.*)

Gives yield of mines, also notes on the lodes or seams of mines in which accidents have happened.

Rivers Conservation. Address and Papers read before the British Association at Dublin, 1878. Pp. iv, 131. 8vo. *London.*

Joseph Lucas. Hydrogeological Survey of England, pp. 68–71. Advocates such a survey for each great river basin.

[The Mineral Production of Austria (exclusive of Hungary) in 1877.] *Oesterr. Zeitschr. Berg- Hütt.* Bd. xxvi. p. 377.

[The Mineral Production of Russia in 1876.] *Ibid.* p. 339. Abstract in *Proc. Inst. Civ. Eng.* vol. lv. pp. 426–428.

SUPPLEMENT FOR 1874–1877.

Caton, J. D. A paper on the Irregularity of the Flow of Artesian Wells, read before the Academy of Sciences of Chicago. 8vo. *Chicago?*, 1874.

Firket, Ad. Notice sur la Carte de la Production, de la Circulation, et de la Consommation des Minerais de fer, de zinc, de plomb, et des pyrites en Belgique en 1871. [Belgian Mineral Statistics for 1871.] *Ann. Trav. publ. Belg.* t. xxxiv. pp. 399-439. [1877.]

Amplification of the table noticed in the Geological Record for 1874, p. 189.

Gould, Charles. Report on the Iron Ores of Londonderry in Nova Scotia, the Property of the Steel Company of Canada, Limited. Pp. 52. 8vo. *London*, 1875.

Langley, A. A., and **C. J. Bellamy.** Slate Quarrying in the Festiniog District, North Wales. *Proc. Inst. Civ. Eng.* vol. xlvi. pp. 211-224, pl. 21 (plan and sections), 4 woodcuts. [1876.]

About 20 quarries are worked. The average dip of the beds is about 30° N. magnetic: the cleavage ("split") is 45° in the same direction; secondary lines of cleavage ("pillaring"), along which the slate splits less easily, make an angle of about 15° with the magnetic N., and incline at various angles. Other technical terms, cost of working, &c. are described. W. T.

Lapa, J. I. F. Chimica agricola ou Estudo analytico dos terrenos, das plantas e dos estrumes. 8vo. *Lisbon*, 1875.

Lidōrikē, P. Statistikai plērophoriai peri tōn exorussomenōn oruktōn ē metalleumatōn en Helladi. [Mineral Statistics of Greece.] *Athens*, 1875.

Meunier, Stan. Géologie technologique. Traité des applications de la Géologie aux arts et à l'industrie. [Free Translation of Page's Economic Geology.] Pp. 344. 8vo. *Paris*, 1876. See Geological Record for 1874, p. 193.

Nivet, Dr. — Considérations générales sur les diverses Espèces de Goîtres observées dans le Département du Puy-de-Dôme. [Goitre in the Puy-de-Dôme.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 751–761, pl. xiv. (map.) [1877.]

Refers to the connection of goitre with the subsoil (pp. 751, 752), with a table of the number of villages with and without goitre on 5 sets of subsoil. Goitre is more common on the calcareous magnesian soils than on others. Western Mountainous Plains (pp. 754–756), with 2 tables of the percentage of goitre on 7 and 11 sets of rocks. Lower part of the Allier Basin (pp. 756–759?). W. W.

Oriol y Vidal, R. [Coal-fields of Espiel and Belmez, Spain.] *Echo des Mines et de la Métallurgie*, vol. i. p. 100, vol. ii. pp. 21, 32, 44. Abstract in *Proc. Inst. Civ. Eng.* vol. xlix. pp. 353, 354.

Orth, —. Das geologische Profil nach seiner Bedeutung für den Bodenwerth und die Landescultur. [Relation of Geological Structure to Land Valuation and Agriculture.] *Nachricht der Klub der Landwirthe zu Berlin*, pp. 12. [1874.]

——. Ueber die Anforderungen der Geographie und der Land- und Forstwirthschaft an die geognostische Kartographie des Grundes und Bodens. [Utility of Geological Maps.] 8vo. *Berlin*, 1877.

——. Die Schwarzerde und ihre Bedeutung für die Kultur. [Agricultural Value of Black Earth.] *Die Natur*, 1877, no. 3.

Pommerol, Dr. François. Recherches sur la Fièvre intermittente dans la Limagne d'Auvergne. [Intermittent Fever in the Limagne.] *Compt. Rend. Assoc. Franç.* 5 sess. p. 827. [1877.]
Medical Geology and Etiology, pp. 827–831.

Tunner, P. Ritter von. Das Eisenhuettenwesen der Vereinigten Staaten. [Metallurgy of Iron in the United States.] 3 pls. 8vo. *Vienna*, 1877.
Embodies the results of a visit to the Philadelphia Exhibition.

[*Note.*—Many papers, &c. that refer to the practical application of geology, and to the occurrence of coal, metalliferous ores, &c., are noticed under STRATIGRAPHICAL GEOLOGY.
The GENERAL INDEX gives references to all minerals of economic value.]

PETROLOGY.

Sub-Editor Prof. T. G. BONNEY, F.R.S., F.G.S.

Beasley, H. C. On the Microscopic Structure of the Carboniferous Limestone with reference to its mode of deposition. *Proc. Liverpool Geol. Soc.* vol. iii. pt. iv. pp. 359–361.

Foraminifera indicate shallow-water conditions, and occur between the grains of oolitic bands as well as in the ordinary condition of the limestone. C. E. R.

Becke, Friedrich. Gesteine von der Halbinsel Chalcidice. [Rocks of the Chalcidice Peninsula.] *Sitz. k. Ak. Wiss. Wien*, Bd. lxxvii. pp. 609–615.

Petrological notes on massive igneous rocks, gneiss, and phyllite-slate.

Caldéron y Arana, Prof. Salvador. L'Ophite d'Espagne. [Spanish Serpentine.] *Arch. Sci. Phys. Nat.* t. lxiv. pp. 353–357.

Caldéron y Arana, Prof. Salvador, and Prof. Francisco Quiroga. Gabinete de Historia Natural. Catalogo de la Coleccion de rocas clasificada por los Professores. [Catalogue of Rock-Collection in the Cabinet of Natural History.] *Bol. Inst. Libre Enseñ. Madrid*, año ii. pp. 23, 24, 31, 32.

List, with localities, formations, &c.

Cloëz, S. Note sur une matière minérale d'apparence vitreuse qui se depose sur les rochers du littoral de la Méditerranée. [An apparently Vitreous Mineral Substance deposited on the Rocks of the Mediterranean Coast.] *Bull. Soc. Géol. France,* sér. 3, t. vi. pp. 84, 85.

Gives an analysis which proves that the substance, long supposed to be a silicate, consists essentially of carbonate of lime agglomerated by a small proportion of organic matter. (See GEOLOGICAL RECORD for 1874, p. 173.) G. A. L.

Cossa, Prof. A. Ricerche chimiche su Minerali e Roccie dell' Isola di Vulcano. [Analyses of Minerals and Rocks from Vulcano.] *Gaz. Chim. Ital.* an. viii., and *Atti R. Ac. Linc.* ser. 3, *Mem.* vol. ii. pp. 117–125.

Describes a potash-alum with thallium, rubidium, and cæsium. Gives analyses of gas from a grotto near Faraglione.

——. Sulla diabase peridotifera di Mosso nel Biellese. [Peridotic Diabase of Mosso in the Biella District.] *Atti R. Ac. Linc.* ser. 3, *Mem.* vol. ii. pp. 497–501.

The rock occurs only in boulders. It is rather minutely crystalline. The various constituents are described, and an analysis is given. It has much resemblance to the euphotide of Ivrea, of which also an analysis is given. T. G. B.

Cossa, Prof. A. Sul serpentino di Verrayes in Valle di Aosta. [On the Serpentine of Verrayes.] *Atti R. Ac. Linc.* ser. 3, *Mem.* vol. ii. pp. 933–937, pls. 1–4.

The rock is described microscopically and chemically. By the fusion of a serpentine from Fararo crystallized peridote was obtained, and from this a mass of crystallized enstatite. Artificial crystals of enstatite had also been produced. T. G. B.

Cotta, B. von. Rocks Classified and Described. English edition, by **P. H. Lawrence,** with English, German, and French Synonyms. New edition. 8vo.

Cresson, Dr. C. M. Bituminous Material from Pulaski County, Virginia, U. S. *Proc. Amer. Phil. Soc.* vol. xvii. no. 100, pp. 215, 216.

Sp. gr. 1·566, volatile matters 7½, fixed carbon 65½, and ash 27 p. c.

Dana, Prof. J. D. On some Points in Lithology. *Amer. Journ.* ser. 3, vol. xvi. pp. 335–343, 431–440.

Shows that in many cases rocks which have received different names are identical in mineral constitution. Objects to the terms older and younger being applied to rocks, since rocks of very different ages may have a similar mineral constitution. Discusses the value of the terms Diabase, Dolerite, Felsite, Trachyte, and Gabbro, also that of foliation and porphyritic structure for purposes of nomenclature. Regards the presence or absence of quartz as only of sufficient value for purposes of minor subdivision. Insists upon the division into a mica and potash-felspar series and a hornblende and potash-felspar series in classifying the granitic and syenitic rocks. Censures the use of the term plagioclase, because of the existence of microcline. In discussing the diorites, objects to the name mica-diorite. Upholds the distinction between rocks containing augite and those containing hornblende, as indicative of very persistent conditions of genesis. Treats of massive and schistose structures. Alludes to questions of metamorphic and eruptive origin, and advocates the use of the prefix *meta*, as metadiorite, in certain instances. Gives three pages of conclusions, including a classification of rocks, based upon their dominant mineral constituents. F. R.

Daubrée, A. On Points of Similarity between Zeolitic and Siliceous Incrustations of recent Formation by Thermal Springs and those observed in Amygdaloids and other altered Volcanic Rocks. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 73–85, pl. iv. (microscopic sections).

Describes the minerals found in the cavities of Roman bricks: these are chabasite, christianite (?), mesotype, opal, tridymite (?), chalcedony, calcite. Compares these with the zeolitic formations in the cavities of igneous rocks, and points out the importance of the evidence as showing that the latter can be formed after cooling, and at moderate temperatures, by the aid of water. T. G. B.

Daubrée, A. Rapport sur un mémoire de M. Lawrence Smith, relatif au fer natif du Groënland et à la dolérite qui le renferme. [Report on Smith's Memoir on the Basalt with Native Iron of Greenland.] *Compt. Rend.* t. lxxxvii.

Davies, T. Note on a Rock-specimen from the centre of the so-called Porphyritic Mass to the East of Tal-y-sarn. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 152. See **Hicks**, p. 15.

The rock is a quartz-felsite breccia.

——. Appendix on the Microscopic Structures of some Dimetian and Pebidian Rocks of Pembrokeshire. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 164–166. See **Hicks**, p. 15.

Describes 6 Dimetian and 2 Pebidian rocks.

Dieulafait, L. Existence de la baryte et de la strontiane dans toutes les roches constitutives des terrains primordiaux. Filons métallifères à gangue de baryte. [Baryta and Strontia in all Primordial Rocks: Metallic Veins with Barytic Matrix.] *Compt. Rend.* t. lxxxvii. p. 934; *Ann. Chim. Phys.* December.

In over 200 varieties of granite, gneiss, and other rocks, Ba and Sr are present. The reactions by which celestine, heavy-spar, and free sulphur are produced in beds of gypsum are indicated. W. H. D.

Duvillier, —. Sur la présence de l'acide phosphorique dans toute la série géologique. [Presence of Phosphoric Acid throughout the Geologic Series.] *Mém. Soc. Sci. Lille*, sér. 4, t. v.

Ferrero, —, and **Musaio, —.** Studî ed Analisi sopra le rocce vulcaniche costitutive in alcuni punti del Territorio della Provincia. [Volcanic Rocks of the Caserta Province, Naples.] *Ann. Staz. Agr. Caserta*, ann. vi. no. 6.

Fouqué, Prof. F., and **A. Michel-Lévy.** Sur quelques faits nouveaux de perlitisme des roches et sur la reproduction artificielle des fissures perlitiques. [Perlitic Structure of Rocks.] *Compt. Rend.* t. lxxxvi. pp. 771–773.

Frazer, Prof. Persifor, Jun. Remarks on Prof. Prime's paper. [See *post*, under AMERICA.] *Proc. Amer. Phil. Soc.* vol. xvii. no. 100 pp. 255–258.

The hæmatites are probably due to oxidation of iron-pyrites, and aggregation of the oxide at the lowest point to which water percolated.

Gemmellaro, G. G. Sulle rocce basaltiche della provincia di Palermo. [Basalts of Palermo.] *Bull. Soc. Sci. Nat. Palermo*, p. 1.

Gilpin, E. Canadian Coals. Their Composition and Uses. *Trans. N. Engl. Inst. Eng.* vol. xxvii. pp. 213–241.

Gives analyses of Coals from Cape Breton, Pictou, and Springhill Coal-fields, New Brunswick, the N.W. Territory, British Columbia, and Queen Charlotte Islands, made by **C. Hoffman**, **Dr. H. How**, **R. Brown**, and the author. R. B. N.

Gümbel, Dr. C. W. Phyllit- oder Sericitgneiss. [Phyllite- or Sericite-gneiss.] *N. Jahrb.* pp. 383–385.

——. Das Gestein der Juliersäule, u. s. w. [The Rock of the Julier Column.] *N. Jahrb.* Heft iii. pp. 296–300.

Describes the rock forming the column on the Julier Pass, reputed to be of Roman age. It is a soft, unctuous, greenish rock of scaly-granular texture, and very durable. Analysis shows that it is a chloritic potstone (Topfstein). More than half its weight is decomposed by HCl. The decomposable part consists of impure magnesite, with a serpentine-like mineral, and perhaps with brucite. The undecomposable part is principally talc, mixed with chlorite, actinolite, and a soda-lime felspar. Chromite and magnetite are also present. A like rock is quarried near Pontresina, in the Upper Engadine; and the Romans probably obtained this stone from the neighbourhood. F. W. R.

Hamberg, N. P. Undersökning af Badgyttjan vid Marstrand. [Examination of the Bathing-mud at Marstrand, Sweden.] *K. Svenska Vet. Akad. Handl.* Bd. 16, no. 6, pp. 1–32.

I. Physical examination (mechanical and microscopic analyses, specific gravity, spec. heat). II. Chemical examination (qualitative and quantitative). Analyses given. Besides silicates, carbonates, chlorides, calcium sulphate, iron sulphate, and organic remains, &c., the mud contains iodine, bromine, lithium, phosphoric acid, copper, nickel, cobalt, lead, tin, arsenic, zinc, bismuth, and baryta. E. E.

Hana~~n~~u, K. Anorthit-olivinfels fra Grogn. [Anorthite-olivine Rock from Grogn, Norway.] *Nyt Mag. Nat.* Bd. 24, H. 2, pp. 143–145.

Hansel, V. Die petrographische Beschaffenheit des Monzonits von Predazzo. [Petrography of the Monzonite of Predazzo.] *Jahrb. k.-k. geol. Reichs.* t. xxviii. pp. 449–466.

The Monzonite consists of orthoclase, plagioclase, biotite, augite, uralite, diallage, hornblende, with iron oxide, apatite, &c. as accessories. The different varieties are described, and analyses are given. T. G. B.

Hartmann, Max. Arbeiten aus den mineralogischen Institut der Universität Breslau. 9. Ueber Basalte der Auckland's Inseln. [Basalt of the Auckland Islands.] *N. Jahrb.* pp. 825–830.

A petrological description of the rock.

Hawes, G. W. Mineralogy and Lithology of New Hampshire. Geology of New Hampshire, vol. iii. part iv. pp. 262. 12 pls. 8vo. *Concord, N. H.*

Deals principally with microscopic structure.

Hector, Dr. J. Twelfth Annual Report on the Colonial Museum and Laboratory, together with a list of Donations and Deposits during 1876–77. Pp. 55. 8vo. *Wellington.*

Gives an epitome of the collections made by the Geol. Survey in

1876–7, the results of analyses of coals, rocks, and minerals (limestones, clays, &c.), metals and ores (mispickel, stibnite, iron ores, tin, silver and gold ores), waters from hot springs, including the Pink Terrace of Rotomàhànà. R. E., Jun.

Helland, A. Mikroskopisk Undersögelse af en Del Bergarter i det nordlige Norge. [Microscopical Examination of Rocks from N. Norway.] *Tromsö Museums Aarshefter*, i. p. 1.

Hjortdahl, Th. Mineralanalyser. [Mineral Analyses.] *Nyt Mag. Nat.* Bd. 24, H. 2, pp. 138–142.

Hypersthene from Romsås; Silurian limestone from Mjöndal.

Höhn, E. Der Melaphyr von Schneidemüllerskopf bei Ilmenau. [Melaphyre, Ilmenau.] 8vo. *Jena.*

Hofmann, —. A deli Bakony bazalt közetei. [Basalts of the Bakonywald.] *Jahrb. kön. ung. geol. Anst.* t. iii. p. 337.

Hussak, Eugen. Ueber den sogenannten Hypersthen-Andesit von St. Egidi in Untersteiermark. [On the so-called Hypersthene-Andesite of St. Egidius in Lower Styria.] *Verh. k.-k. geol. Reichs.* pp. 338–340.

Gives a detailed description of the microscopic characters of the rock, and shows that the supposed Hypersthene is really Augite, and the rock, therefore, an ordinary Augite-Andesite. G. A. L.

——. Die basaltischen Laven der Eifel. [Basaltic Lavas of the Eifel.] *Sitz. k. Ak. Wiss. Wien*, Bd. lxxvii. pp. 330–366.

Describes many lavas and tuffs, giving analyses by **Mitscherlich** (1865). The lavas differ from the basalts in containing no felspar, but nepheline and leucite; their olivine is of secondary formation; they contain melilite, hauyne, and (at Scharteberg) perowskite, unknown in the basalts. The so-called basalt of the Lüxenberg is a garnet-pikrite, with double-refracting garnets (probably melanite). W. H. D.

Inkey, Dr. Béla. [Hungarian Dolerite.] *Földt. Közl.* köt. viii. sz. 5.

[**Jones, Prof. T. R.**] Notes on some Sarsden or Sarsen Stones. *Trans. Newbury Field Club*, vol. ii. pp. 248–252.

i. Concretionary with Calcareous Cement. Refers to the mass in place at Langley Park, N. of Newbury. ii. Root-marked. Refers to stones with tubular cavities. W. W.

Julien, Prof. A. A. On Biotite as a Pseudomorph after Olivine. *Amer. Journ. Micr. Pop. Sci.* vol. iii. pp. 275–277.

Gives a brief résumé of the observed alterations of olivine, and describes a chrysolitic diabase or gabbro from near Bad River Falls in Ashland Co., Wisconsin, in which the olivine has been more or less replaced by biotite, and generally by some talc. The talc usually forms a thin external crust, but in some cases alternates with biotite in thin crusts. Describes the process of alteration. F. R.

Kalkowsky, E. Ueber den Piperno. [On Piperno.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 633–677

Describes the structure and chemical composition of the Piperno of Camaldoli near Naples. It is an augite-trachyte, with decomposed sanidine and plagioclase; hornblende is present in cavities, but augite in the mass of the rock. No nepheline could be found; but sodalite is present. The different constituents are described in detail. T. G. B.

Kalkowsky, E. Der Granitporphyr von Beucha bei Leipzig. [The Granite-porphyry of Beucha near Leipzig.] *N. Jahrb.* Heft iii. pp. 276–286.

This rock is remarkable for containing glass-enclosures, and yet presenting a granitic texture; but it is shown that its relations lie with the felsite-porphyries, and not with the true granites. It contains augite, and in composition, habit, structure, and mode of occurrence closely resembles the augite felspar-porphyry of Leipzig. F. W. R.

——. Der Leucitophyr vom Averner See. [Leucitophyre from Lake Avernus.] *N. Jahrb.* pp. 727–729.

Petrological description.

Killing, K. Ueber den Gneiss des N.O.-Schwarzwaldes und seine Beziehungen zu den Erzgängen. [Black Forest Gneiss and its Relations to the Ore-veins.] Pp. 30. 8vo. *Würtemberg.*

Klipstein, Dr. v. [Nepheline-rock of Meiches.] *N. Jahrb.* pp. 722–725.

Petrological description.

Koch, Dr. Antal. Az Aranyi hegy (Hunyad M.) közete és ásványai, és ezek között két uj faj. [Rocks and Minerals of Mt. Arany (Hunyadi County) with two new species.] *Math. Termész. Közlem.* köt. xv. pp. 23–57; 2 pls., map (not geol.), 2 sections of hill, 2 rock sections, 6 crystals.

• Mt. Arany consists of augite-andesite containing garnet, amphibole, hæmatite, titanite ?, rubellan, tridymite, and two new minerals—*Pseudobrookite*, a titaniferous iron ore, and *Szaboite*, a silicate near Babingtonite. Analyses by **F. Koch** and crystallographic measurements are given. W. H. D.

——. [Petrology of the Crystalline and Massive Rocks of the Drocsa-Pietrosza Mts. and similar Transylvanian Rocks.] *Földt. Közl.* köt. viii. sz. 4.

——. [Petrology of the Zápszony Mts. in Beregh County.] *Földt. Közl.* köt. viii. sz. 5.

Koch, Dr. Antal, and **Sándor Kurthy**. A Vlegyásza és a szomszéd területek Trachitjainak közettani és hegyszerkezeti viszonyai. [Petrology of the Trachyte of the Vlegyásza District.] *Evk. Erdel. Muz. Egyl.* n. s. köt. ii sz. 8, pp. 271–398.

Koós, Gabr. [Nagyagite Banater. Chrome Iron Ore from the Banat.] *Müegyet. Lapok.* köt. iii.; noted in *Lit. Ber. Ung.* 2 Jahrg. p. 331.

Lagorio, A. Die Andesite des Kaukasus. Pp. 45. 8vo. *Dorpat.* Price 2*s.* 6*d.*

Describes the microscopic structure of Abich's collection of Andesites from Armenia and the Caucasus. Objects to the separation of hornblende from augite-andesites, as no line is to be drawn between them, and classifies them, according to the amount of glassy base which they contain, into fully crystalline, half glassy, and glassy Andesites. Some Domite-like examples are shown by the microscope to be fragmental; these are supposed to have been compacted by heat sufficient to fuse them again partially. It is suggested that Domites generally may be pyroclastic. E. B. T.

Lasaulx, A. von. On the Tridymite Quartz Trachyte of Tardree Mountain, and on the Olivine Gabbro of the Carlingford Mountains. *Journ. R. Geol. Soc. Ireland*, n. s. vol. v. pt. 1, pp. 30–38; and *Proc. R. Dublin Soc.* vol. ii. (n. s.) pt. 1, pp. 25–33; 2 woodcuts.

Announces the discovery of tridymite, in hexagonal tables, in the quartz-trachyte of Tardree Mt. The rock yields sanidine, a clinoclastic felspar, tridymite, quartz, biotite, magnetite, epidote, apatite, and a microcrystalline paste. The optical characters of the tridymite are discussed. The olivine-gabbro is composed of anorthite, diallage, an altered olivine, and magnetite. F. W. R.

——. Beiträge zur Kenntniss der Eruptivgesteine im Gebiete von Saar und Mosel. [Eruptive Rocks in the District of Saar and Mosel.] *Verh. nat. Ver. preuss. Rheinl.* ser. 4, Bd. v. pp. 163–236, 2 plates.

The rocks occur in Devonian, Carboniferous, and Triassic strata. The following varieties are described:—diabase-dolerite, amphibolite, diorites, diabase and allied rocks (several varieties), melaphyre (various localities), and porphyry. Their mode of occurrence and the various changes which the component minerals have undergone are minutely described. T. G. B.

——. Petrographische und mineralogische Notizen aus österr. Schlesien. [Petrographical aud Mineralogical Notes from E. Silesia.] *N. Jahrb.* pp. 835–842.

Laufer, E. Beiträge zur Basalt-Verwitterung. [Alteration of Basalt.] *Zeitsch. deutsch. geol. Ges.* Bd. xxx. pp. 67–95.

The basalts chiefly noticed are those of the Hundskopf near Salzungen, Stoffelskupfe and Plasterkaute near Eisenach. Many analyses are given, and microscopic descriptions; the latter by **Francke.** T. G. B.

Lenz, Dr. O. Die Beziehungen zwischen Nyirok, Laterit und Berglehm. [Distinction between "Nyirok," Laterite, and "Berglehm."] *Verh. k.-k. geol. Reichs.* pp. 79–82.

The "Nyirok" of Hungary is an unfossiliferous non-calcareous red plastic clay occurring beneath the Löss; it is a product of the decomposition and erosion of trachytes and tuffs, with whose distribution it coincides. Laterite is the well-known result of atmospheric action on certain rocks (gneiss, granite, clay slate, slate, clayey sandstone) peculiar to tropical countries in both hemispheres. Berglehm or Blocklehm, on the other hand, as it is found on the N. side of the

Carpathians, is older than the Löss, and results from the erosion of the Neogene deposits. G. A. L.

Lesley, J. P. On a Series of Chemical Analysis of Siluro-Cambrian Limestone Beds in Cumberland County, Pennsylvania. *Proc. Amer. Phil. Soc.* vol. xvii. no. 100, pp. 260–266.

Gives a section of 425 feet of limestone in 98 beds, by **R. H. Saunders**, and analyses of the upper 54 of these, by **J. Hartshorne**. The beds are of the Calciferous Limestone formation, and all more or less magnesian, with sharp alternation of dolomite and nearly pure limestone. W. H. D.

Liversidge, Prof. A. Analysis of a Rock Specimen from New Zealand, showing the junction between Granite and Slate. *Trans. N. Zealand Inst.* vol. x. pp. 505, 506.

Gives an analysis of each portion of the rock. The slaty portion contains far less silica, whilst the bases have undergone a corresponding increase in amount. This is accompanied by a rise in the sp. gr. of the slaty portion. R. E., Jun.

Loretz, H. Untersuchungen über Kalke und Dolomit.—1. Süd-Tirol Dolomit. [Investigation of Limestone and Dolomite.—1. South Tyrol Dolomite.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 387–414, pls. xvii., xviii.

Describes the various structures of the Tyrol dolomites, their chemical composition, the organic remains, and the various alterations which they have undergone. T. G. B.

Lossen, K. A. Ueber seine microscopischen Studien an metamorphosirten Eruptivgesteinen. [On his Studies of Metamorphosed Eruptive Rocks.] *Sitz. Ges. nat. Freunde Berlin*, pp. 93–95.

Luca, S. de. Ricerche chimiche sopra una particolare argilla trovata negli Scavi di Pompei. [Analysis of Clay from Pompeii.] *Rend.* ~~*Soc.*~~ *R. Ac. Sci. Napoli*, ann. xvii. fasc. 4. ∂/.

——. Ricerche chimiche sopra un cenere trovato negli Scavi di Pompei. [Analysis of Ash from Pompeii.] *Rend.* ~~*Soc.*~~ *R. Ac. Sci. Napoli*, ann. xvii. fasc. 4. ∂/.

Meunier, Stan. Origine des roches cristallines; observation à propos d'une Note de MM. Fouqué et Michel-Lévy. [Origin of Crystalline Rocks: Note on the paper of Fouqué and Michel-Lévy, noticed *post* under MINERALOGY.] *Compt. Rend.* t. lxxxvii. p. 864.

Meunier, Stan., and G. Tissandier. Présence de sphérules magnétiques, analogues à ceux des poussières atmosphériques, dans les roches appartenant aux anciennes périodes géologiques. [Presence of Magnetic Spherules in Ancient Rocks, like those in Atmospheric Dusts.] *Compt. Rend.* t. lxxxvi. pp. 450–452.

Describe the occurrence of magnetic spherules in unaltered sedimentary rocks of all ages and also in recent sea-bottoms from the N. coast of Africa. None were found in crystalline rocks. The conclusion is arrived at that these spherules are of cosmic origin. G. A. L.

Meyer, Dr. Otto. Untersuchungen über die Gesteine des St. Gotthardtunnels. [Rocks of the St. Gotthard Tunnel.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 1–24.

Describes the various rocks upon the S. side of the tunnel and their constituents. These are mica-schist (in which occur staurolite, zirkon, &c.), hornblende-schist, calcareous mica-schist, quartzite. Those on the N. side, the "granit-gneiss" and ordinary gneiss with its contents, crystalline limestone, &c., are more briefly noticed. T. G. B.

Michel-Lévy, A. Note sur quelques Ophites des Pyrénées. [Ophites from the Pyrenees.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 156–177.

These rocks contain diallage and augite approaching that variety, which pass into amphibole, a mineral akin to chlorite, epidote, felspar, sometimes oligoclase, sometimes labradorite, in one case also a monoclinic species. The oligoclase ophites are usually rich in quartz; ilmenite is present, and hæmatite. Discusses the age of these ophites, which is concluded to be Tertiary. T. G. B.

——. Sur une roche à sphène, amphibolite et wernérite granulitique des mines d'apatite de Bamle près Brevig (Norwége). *Bull. Soc. min. France*, no. 3. [See also p. 93.]

——. De l'emploi du microscope polarisant à lumière parallèle pour la détermination des espèces minérales contenues dans les plaques minces de roches éruptives. [Employment of the Polarizing Microscope, with parallel light, for the Determination of Minerals in thin Slices of Eruptive Rocks.] *Compt. Rend.* t. lxxxvi. pp. 346–348.

Moss, R. J. On the Chemical Composition of the Coal discovered by the Arctic Expedition of 1875–6. *Proc. R. Dublin Soc.* n. s. vol. i. pp. 61, 62.

Refers to an extensive seam of coal in Grinnell Land, the shale overlying which was rich in fossil remains of a Miocene flora. Compared with various coals, it is found that it most resembles those of the Carboniferous period. Alludes to the impossibility of determining the age of coal from its chemical composition. Gives analyses. T. W. N.

Muir, M. M. P. Note on an Edible Clay from New Zealand. *Proc. Manch. Lit. Phil. Soc.* vol. xvii. pp. 6, 7.

Gives analysis.

Neucourt, L. [Analyses of Egyptian Soils.] *Compt. Rend. Labor. Verdun*, p. 199.

Two analyses of rich and poor soils from Coum-el-Akdar, 45 kil. from Alexandria.

——. Analyse des terres du bassin de la Meuse dans l'arrondissement de Verdun. [Analysis of Earths in the Verdun District.] *Compt. Rend. Labor. Verdun*, p. 210.

Penck, Albrecht. Studien über lockere vulcanische Auswürflinge. [Loose Volcanic Bombs.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 97–120, pl. v.

A description of the structure of several varieties of lapilli and the mineral contents of volcanic ashes, the materials examined among others being from the Lipari Islands, Vesuvius, Auvergne, Jorullo, Costarica, Java, the Eifel, and Sandwich Isles. T. G. B.

Pfaff, S. Ueber die unlöslichen Bestandtheile der Kalke und Dolomite. [Insoluble Parts of Limestone and Dolomites.] *Zeitschr. ges. Nat.* Folg. 3, Bd. iii. pp. 273–294.

Gives analyses of residues of Devonian, Carboniferous, Triassic, Jurassic, and Cretaceous limestones from Germany and Belgium, of suspended Rhine mud and loess, and of dolomites. W. H. D.

Phillips, J. A. On the so-called Greenstones of Central and Eastern Cornwall. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 471–497, pls. xx.–xxii. (microscopic rock-sections).

A large number of the so-called greenstones are described macroscopically and microscopically, and chemical analyses are given. Some appear to be contemporaneous lava-flows, which contain or have contained augite, this mineral undergoing alteration into hornblende or viridite. Some of the more slaty-looking rocks were probably lavas; others, however, more likely volcanic mud. Thinks these igneous rocks more ancient than the granite of the country. T. G. B.

Posevitz, Dr. T. [Dobschau Greenstone.] *Földt. Közl.* köt. viii. sz. 5.

Reade, T. M. Induced Structure in Stone. *Geol. Mag.* dec. ii. vol. v. pp. 143, 144.

On a tombstone of sandstone exfoliating parallel to the worked surface.

Rénard, Rev. A. Sur la Structure et la Composition Minéralogique du Coticule et sur ses Rapports avec le Phyllade Oligistifère. [Belgian Whetstone and its Relation to the Oligistic Phyllites.] *Mém. cour. Sav. Etr. Ac. R. Belg.* t. xli. art. 2, p. 44, pl. (6 microsc. sections).

This rock characterizes the U. Salmian series. Its structure and composition are described with analyses by **Dr. v. d. Marck** and — **Pufal.** The principal ingredients are globular spessartine-garnets and tourmaline prisms in a micaceous base. See GEOLOGICAL RECORD for 1876, p. 212, and for 1877, p. 206. W. H. D.

——. La diabase de Challes. [Diabase of Challes.] *Bull. Ac. R. Belg.* sér. 2, t. 46, pp. 228-239, cut in text, and plate.

Describes the petrography and the microscopic structure of this rock. It contains altered plagioclase, augite, with chlorite and altered titaniferous iron. Some of the augite has passed into uralite, some to a chloritic mineral. There is some free quartz. T. G. B.

——. Recherches lithologiques sur les phthanites du calcaire carbonifère de Belgique. [Petrology of the Carboniferous Limestone Chert of Belgium.] *Bull. Ac. R. Belg.* sér. 2, t. 46, pp. 471–499, plate.

The varieties of the chert are described; and their microscopic structure is investigated. Brings forward evidence to show that these cherts are produced by the action of acidulated water dissolving the calcareous material of the rock and replacing it by silica. This action took place before the complete solidification of the rock and the formation of joints, fissures, &c. T. G. B.

Roth, Dr. Samuel. [Examination of the Melaphyre of the Lower Tatra.] *Földt. Közl.* köt. viii. sz. 2.

——. [Diabase-porphyry of Jekelfalva, hitherto regarded as Serpentine.] *Ibid.* sz. 4.

Russell, I. C. On the Intrusive Nature of the Triassic Trap Sheets of New Jersey. *Amer. Journ.* ser. 3, vol. xv. pp. 277–280.

At first sight these appear to be interbedded in the Jersey Trias; but in one place the igneous rock clearly alters the superjacent rock; near the junction with the stratified rock below there is sometimes a friction-breccia. Similar evidence is obtained at Feltville, where rocks analogous to those of New Jersey occur. T. G. B.

Sandberger, F. Ueber Basalt und Dolerit bei Schwarzenfels in Hessen. [Basalt and Dolerite near Schwarzenfels in Hesse.] *N. Jahrb.* Heft i. pp. 22–26. and Min. petr. Mitth. Bd. i. p. 280.

Dolerite distinctly cuts through felspar-basalt at several localities in Hesse. The basalt consists of plagioclase (probably labradorite), augite, magnetite, and olivine; the dolerite of andesine, sanidine, augite, ilmenite, and olivine. They also differ chemically. Analyses are given of both rocks, and also of a vitreous dolerite occurring as bombs in an agglomerate at Schwarzenfels. These bombs occur in a palagonite-like matrix, evidently altered ashes; the larger bombs are glassy on the surface and doleritic within. F. W. R.

Schmidt, Dr. Adolf. Quarz-Diorit von Yosemite. [Quartz-diorite of the Yosemite.] *N. Jahrb.* pp. 716–719.

Petrological account of this N. American rock.

——. Ueber eine Umwandlung des Hornsteins. [Alteration of Hornstone.] *N. Jahrb.* pp. 719–721.

The hornstone of S.W. Missouri decomposes into a sort of tripoli, the microscopic structure of which is described.

Schumacher, E. Die Gebirgsgruppe des Rummelsberges bei Strehlen. [The Mountain Group of the Rummelsberg near Strehlen.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 427–520, pl. xx.

Gives a general sketch of the region. Describes in detail the various rocks: these are granite (masses and veins), of which there is more than one variety, microgranite, gneiss of several kinds, granitic gneiss and stratified granite (granular gneiss), hornblende-schist, quartzite, mica-schist, talcschist, crystalline limestone, calcareous schist with diopside, &c. Many analyses are given. T. G. B.

Schweitzer, P. [Gneiss of Manhattan, New York.] *Jahresbericht der Chemie*, p. 1282.

Gives full analysis.

Semmons, William. Notes on the Mineralogical Structure of some Cornish Granites. *Proc. Liverpool Geol. Soc.* vol. iii. t. iv. pp. 350–358.

Describes the granite of Carnsew, Carn Grey, Lamorna, Luxulyan, and of Trowlisworthy in Devon, &c. Quartz was the first mineral to crystallize. Metamorphic action has been at work on rocks appearing to retain their original structure. C. E. R.

Senft, Prof. F. Die Thonsubstanzen (Kaolin, Thon, Löss, Lehm, Letten und Mergel). [Clay-rocks: Kaolin, Clay, Loam, and Marl.] 8vo. *Berlin.*

Sigmund, Alois. Petrographische Studie am Granit und Orthoklasporphyr der Umgebung von Predazzo. [Petrographical Study of the Granite and Orthoclase-Porphyry of the Neighbourhood of Predazzo.] *Verh. k.-k. geol. Reichs.* pp. 340, 341.

The granite contains glass inclusions. The rocks of the Fleimserthal formerly called porphyrite are divisible into two well-defined groups, Liebenerite rocks and quartz-bearing orthoclase rocks. G. A. L.

Sjögren, Hj. En barythaltig mangankalk från Långbans grufvan. [Barytic Manganese-limestone from Långban mine, Sweden.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 111, 112.

Contains $BaO, CO_2 = 2{\cdot}04$; $MO, CO_2 = 10{\cdot}06$; $CaO, CO_2 = 87{\cdot}14$.

Stapff, F. M. Einige Bemerkungen zu Herrn Dr. O. Meyer's "Untersuchungen über die Gesteine des Gotthardtunnels." [Criticism of Dr. O. Meyer's "Investigation of the Rocks of the Gotthard Tunnel.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 130–139, pl. vi.

Criticises a number of the statements, especially those connected with the stratigraphy of the rocks and the mode of occurrence of some of the more conspicuous minerals. T. G. B.

Szabó, Jozsef, and **Ignacz Horvath.** A belföldi banyákban termelt burkolatkovek közettani és erömütani vizsgálata. [Petrological and Mechanical Examination of the Plasterstone raised inland.] Pp. 50. 8vo. *Budapest.*

Thomas, J. W. A Treatise on Coal, Mine-Gases, and Ventilation; with copies of Researches "On the Gases enclosed in Coal," &c. Pp. x, 385. 8vo. *London.*

Describes the principal varieties of coal, quoting analyses of Welsh, Lancashire, Bovey, Scotch, and Bohemian coals, and of the gases evolved by these and Saxon, Westphalian, and Northumbrian coals, and from Whitby jet. The chemistry of carbon, hydrogen, and sulphur, and of explosions and combustion and modes of ventilation, are followed by an Appendix, reprinting papers noticed in the GEOLOGICAL RECORD for 1875, p. 261, 1876, p. 243, and 1877, p. 254. W. H. D.

Thorpe, Prof. T. E. The Chemistry of Coal. *Keighley News,* March 9 and 16 (2 lectures).

Thoulet, —. Séparation des éléments non ferrugineux des roches, fondée sur leur différence de poids spécifique. [Separation of the non-ferruginous Elements of Rocks based on their different specific gravities.] *Compt. Rend.* t. lxxxvi. pp. 454–456.

Describes a method of rock-analysis by means of solutions of iodide of potassium. In this manner quartz can be separated from the felspars, the latter from each other, and all from minerals having a specific gravity greater than 2·77 (*i. e.* that of the solutions at a temperature of 11° C.). G. A. L.

~~**Törnebohm, A. E.** Om Sveriges vigtigare Diabas- och Gabbro-arter. [Swedish Diabases and Gabbros.] 4to. *Stockholm.*~~

Cancel
see Errata p. xx

Tribolet, M. de. Etudes géologiques et chimiques sur quelques Gisements de Calcaires Hydrauliques du Vésulien du Jura Neuchâtelois. [Hydraulic Limestones of the M. Oxfordian of the Neuchâtel Jura.] *Bull. Soc. Vaud. Sci. Nat.* sér. 2, vol. xv. pp. 246–250.

Briefly notes the fauna of these shelly limestones and the extent of their employment in commerce, giving 12 complete analyses by **Leuba** brothers, **G. Lennier, Michaud, Frühling, Michaelis, Prof. Sacc,** and others. W. H. D.

Trippke, P. Beiträge zur Kenntniss der schlesischen Basalte und ihrer Mineralien. [Silesian Basalts and their Minerals.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 145–209, pls. vii., viii.

18 varieties of basalt examined and described: 15 are plagioclase-basalt (one being a mica-basalt), 2 nepheline-basalt, and 1 a nephelinite. The chief minerals described are the enstatite of the Grioditzberg and the twin-crystals of Phillipsite from Sirgwitz. T. G. B.

Wichmann, Arthur. Einige Bemerkungen über die Sericitgesteine des Taunus. [The Sericite-rocks of the Taunus.] *N. Jahrb.* Heft iii. pp. 265–275.

Doubts whether albite forms an essential component of the Taunus rocks. If analyses show much soda, it is probably due to the presence of a ground-mass which is a silicate of soda and alumina in varying stœchiometric proportions. F. W. R.

Wigner, G. W. On Cleopatra's Needle. *Analyst,* no. 33, pp. 382–384. Entered by mistake in Geological Record for 1877, p. 211.

Wolff, Fr. M. Untersuchungen von Melaphyren aus der Gegend von Kleinschmalkalden. [Examination of the Melaphyres from near Kleinschmalkalden.] *Zeitschr. gesammt. Nat.* Folg. 3, Bd. iii. pp. 245–272, pls. 8–10.

The petrography of the district is described; and the various minerals of which the rocks are composed are considered in detail. Analyses are given. T. G. B.

Wyrouboff, G. Note sur l'obsidienne chatoyante du Caucase. [Chatoyant Obsidian of the Caucasus.] *Bull. Soc. min. France,* no. 7, pp. 110–112.

Catalogue of the Geological Museum. Part I. Rock Specimens. 2nd Geological Survey of Pennsylvania. Pp. 218. 8vo. *Harrisburg.*

See also:—

Berendt, G. (and **Dr. L. Dulk**). Analyses of Prussian Soils, &c.: **p. 49.**

Boltze, H. Analyses of Saxon Lignite: p. 127.

Bonney, Prof. T. G. Scotch and Devonshire Rocks: p. 4. Welsh Rocks: under **Hughes**, p. 16.

Calderon y Arana, S. Spanish Serpentine: p. 52.

Collins, J. H. Analyses of Cornish China Clays. Cornish Elvans: p. 6.

Cornet, F. L. Analysis of Lignite, Transylvania: p. 128.

Cossa, A. Pavian Serpentine, &c.: under **Taramelli**, p. 112. Rocks of Vulcano: *post*, under MINERALOGY.

Davies, T. Welsh Rocks: under **Hicks**, p. 15.

Dölter, Dr. C. Tyrolese and Sardinian Rocks: p. 60.

Drasche, Dr. R. von. Réunion and Luzon Rocks: p. 184.

Endlich, F. M. Erupted Rocks of Colorado: *post*, under AMERICA.

Fellner, A., and others. Analyses of Transylvanian Rocks: under **Herbich**, p. 77.

Fouqué, Prof. F. Eruptive Rocks of Corsica: under **Hollande, p. 79.**

Friedrich, P. A. Igneous Rocks, Inselberg: p. 69.

Gastaldi, B. Apenninite: p. 70.

Gjers, J. Analysis of Weardale Limestone: p. 38.

Gumælius, O. Swedish Rocks: p. 74.

Hasselbom, A. Analyses of limestone and marl: under **Erdmann**, p. 63.

Hauer, A., and **A. Giermansky.** Analyses of Coal: under **Olszewski**, p. 96.

Hill, Rev. E., and **Prof. T. G. Bonney.** Leicestershire Rocks: **p. 15.**

Hunter, E. Analyses of Warp: under **Parsons**, p. 25.

John, K. Coal from Persia: *post*, under MINERALOGY.

Kalkowsky, E. Gneiss, Eulen Mts.: p. 81.

Koch, Dr. A. (3 papers.) Hungarian Trachytes: p. 139.

Krzyzanowsky, J. Analysis of Polish Marl: under **Zareczny**, p. 122.

Kuss, H. Analyses of Spanish Melaphyre and Diabase: p. 82.

Lapparent, A. de. Granite, France: p. 83.

Leymerie, Prof. A. Elements of Lithology: *post*, under MINERALOGY.

Lindström, A. Analyses of Peat, Clay, and Marl: pp. 86, 87.

Mack, Prof. D. A. Analysis of Marl: under **Hantken,** p. 136.

Mietzsch, H. Saxon Rocks: p. 144.

Nathorst, A. G. Analyses of Gneiss, Limestone, &c.: p. 95.

Ogier, J. Analyses of French Dolomite: under **Dollfus,** p. 61.

Pettersen, K. (2 papers.) Scandinavian Rocks: p. 98.

Rath, G. vom. [Various petrological matter]: pp. 148, 149.

Ratte, F. Rocks of New Caledonia: p. 185.

Reuléanor, —. Analyses of Belgian Argillites: under **Dewalque,** p. 59.

Risler, E., and — Walther. Analyses of Mud of L. Geneva: under **Forel,** p. 133.

Rochat, L. Analyses of Bitumen, Geneva: p. 150.

Rodwell, G. F. Lavas of Etna: p. 105.

Roth, Dr. S. Sandstone, Hungary: p. 150.

Rothpletz, A. Analysis of Saxon Sinter: p. 105.

Rothpletz, A., and E. Dathe. Analyses of Rochlitz Rocks: p. 150.

Rutley, F. Eruptive Rocks, Devonshire: p. 28.

Schwager, A. Analysis of Sicilian Tuff: under **Stöhr,** p. 110. Pitchstone-porphyry: under **Gumbel,** p. 136.

Siegert, T., and J. Lehmann. Chemnitz Rocks: p. 153.

Smith, A. Analysis of Scotch Oolitic Coal: p. 39.

Studer, B. Cleavage of Rocks of St. Gothard Tunnel: p. 154.

Svedmark, E. Swedish Trap: p. 112.

Szabó, Dr. J. (4 papers.) Hungarian Rocks: p. 155.

Teclu, Prof. N. Analyses of Rocks, Bourbon and Mauritius: under **Drasche,** p. 184.

Thenius, G. Analysis of Austrian Lignite: p. 113.

Truchot, Prof. Analyses of Volcanic Soils, Auvergne: p. 117.

Vélain, C. Rocks of Aden, Réunion, etc.: p. 185.

Ward, J. C. Quartz in the Lake District: p. 267.

Wiik, Dr. F. J. Granite, Finland: p. 122.

SUPPLEMENT FOR 1874–1877.

Angelbis, Gustav. Petrographische Beiträge. [Petrographical Notices.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiv. pp. 118–130. [1877.]

Describes olivino-greenstone from Dillenburg and labrador-porphyry from Westphalia, giving analyses.

Anon. Die chemische Zusammensetzung der Kohlen der Gluckhilf-Grube betreffend. [Composition of the Gluckhilf Coal.] *Hermsdorf*, 1875.

Bernath, J. Beitrag zur Kenntniss des Noseanphonoliths von Hohentwiel im Höhgau. [Noseanphonolite of Hohentwiel.] Inaugural Dissertation. Pp. 47. *Berne*, 1877.

Gives analysis.

Bořický, E. Ueber die Charakteristik und die Verbreitung einzelner Melaphyrarten in Böhmen. [Bohemian Melaphyres.] *Sitz. k. böhm. Ges. Wiss.* p. 221. [1876.]

——. Ueber Perowskit als mikroskopischer Gemengtheil eines für Böhmen neuen Olivingesteines, des Nephelinpikrites. [Perowskite in a new Bohemian Olivine-rock, Nepheline-picrite.] *Sitz. k. böhm. Ges. Wiss.* p. 227. [1876.]

——. Ueber neue mikroskopische und chemische Methoden zur Unterscheidung trikliner Feldspäthe und anderer Minerale, wenn sie in kleinen Körnchen oder in Dünnschliffen zur Untersuchung vorliegen. [New Method of Determination of Grains and Flakes of Triclinic Felspars.] *Sitz. k. böhm. Ges. Wiss.* 1876.

Campani, Prof. Giovanni. Analisi chimica delle sabbie gialle. [Chemical Analysis of Yellow Sands.] *Siena*, 1874.

——. Analisi chimica dell' argille turchine. [Analysis of Blue Clays.] *Siena*, 1875.

Chancourtois, — de. Sur les faits qui rendent probable l'intervention du Cyanogène dans le formation des roches granitoïdes. [Probable Action of Cyanogen in the Production of Granitoid Rocks.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 138–140. [1877.]

Suggests that the carbon compound often present in the quartz of granitic rocks may be cyanogen, not a hydrocarbon. Cyanogen may act as a carrier of iron in volatilization. W. H. D.

Chavannes, S. Origine des gypses et des cargneules. [Origin of Gypsum and Cellular Limestone.] *Arch. Sci. Phys. Nat.* t. liv. p. 312 [1875], and t. lx. p. 309. [1877]. *Act. Soc. Helv. Sci. Nat.* 1875, p. 49.

Regards these as metamorphic products.

Cossa, Prof. A. Sulla diorite quarzifera porfiroide di Cossato nel Biellese. *Atti R. Acc. Linc.* ser. 2, vol. iii., 2 coloured plates. [1876.]

Engelhard, —. Das Petroleum, seine Gewinnung und Producte. [Petroleum, its Source and Products.] *Schrift. Ver. nat. Kenntn. Wien*, Bd. xiv. p. 107. [1874.]

Fouqué, —. Nouveaux procédés d'analyse médiate des roches et leur application aux laves de la dernière éruption de Santorin. [New Methods of Average Rock-analyses, applied to the latest Lavas of Santorin.] *Mém. Ac. Sci. Paris*, t. xxii. no. 11, pp. 14; 2 pls. [1876.]

Friedrich, O. Mikroskopische Untersuchung der Gesteine. [Microscopical Examination of Rocks.] Ed. 2. *Dresden*, 1876.

Garnier, H. Etudes sur les filons métallifères. [Metalliferous Veins.] *Bull. Soc. Industr. min. St. Etienne*, sér. 2, t. v. livr. 3, p. 327. [1876.]

Garrigou, Dr. F. Etude chimique du Dépôt de la Source dite du Rocher à Saint-Nectaire-le-haut. [Chemistry of the Deposit of the Rocher Spring.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 326, 327. [1877.] See also GEOLOGICAL RECORD for 1877, p. 271.

Gives an analysis of a ferruginous deposit, with nearly 7 p. c. of arsenic.

Gerichten, E. von. Der oberfränkische Eklogit. [U. Franconian Eclogite.] *Ann. Chem. Pharm.* Bd. clxxxv. p. 209. [1877.]

Greenwell, G. C. Remarks on Anthracite; suggested by Mr. Boyd's paper "On the Coal Measures and Oil-produce of America." *Trans. N. Engl. Inst. Eng.* vol. xxvi. pp. 39–43; Discussion, pp. 43–48.

Concludes that anthracite has not been formed through the action of heat.

Gümbel, Dr. C. W. Die paläolithischen Eruptivgesteine des Fichtelgebirges. [Palæolithic Eruptive Rocks of the Fichtel Mts.] 8vo. *Munich*, 1874.

Gives the name of *Proterobase* to a group of hornblende-diabases.

Hansel, Vincenz. Die petrographische Beschaffenheit des Trachytes der südlichen Bukowina. [Petrological Description of the Trachytes of S. Bukowina.] *Verh. k.-k. geol. Reichs.* 1877, pp. 150–153.

Hardman, E. T. A Contribution to the History of Dolomite.—The Dolomites of the Carboniferous Limestone of Ireland. *Proc. R. Irish Ac.* ser. 2, vol. ii. no. 7, pp. 705–730. [1877.]
Contains several analyses.

Hauer, C. von. Analisi di alcune rocce del Tirolo Meridionale. [Analyses of S. Tyrolese Rocks.] *Boll. R. Com. geol. Ital.* ann. 7, pp. 146–149. [1876.]
Analyses of red porphyry, Monzonite, and feldspar.

Hilger, A. Zur chemischen Zusammensetzung der Lössbildungen. [Composition of Loess.] *Landw. Versuchs-Stat.* Bd. xviii. [1875.]
Gives analyses by **L. Mutschler** of loess and of calcareous concretions in it.

——. Die Braunkohlen des Bauersberges bei Bischofsheim vor der Rhön. [Lignite of the Bauersberg.] *Ann. Chem. Pharm.* Bd. clxxxv. p. 211. [1877.]
Gives analyses of 5 varieties of lignite and of *Keramohalite,* a new alum, efflorescing from the clay partings of the seams.

——. Analyse eines Trachyt von Wolferdingen im Westerwald. [Analysis of Trachyte from Westerwald.] *Ann. Chem. Pharm.* Bd. clxxxv. [1877.]

Inkey, Béla v. [Rocks of Santorin.] *Földt. Közl.* vol. vi. [1876.]

Jones, C. E. The Manufacture of Coal Gas. . . . . *Trans. Chesterfield Inst. Eng.* vol. iv. pp. 303–318. [1877.]
Second paper. The Chemistry of Coal.

Kletzinsky, —. Die Chemie der Gesteine. [Rock Chemistry.] *Schrift. Ver. nat. Kenntn. Wien,* Bd. xiv. p. 1. [1874.]

Koch, Dr. Antal. A Rakováczi Sanidintrachyt? és Foldpátjainak Vegyelemzese. [Analyses of the Rakovac Sanidine-Trachyte? and Felspar.] *Ertek. Termész. Kör.* köt. v. sz. xi. pp. 13. [1875.]
Gives crystallographic formulæ and analyses, by **Dr. A. Fleischer,** of phonolite, dolerite, felspar, &c.

——. Erdelynek a müiparban ertekesithetö ásványairól és közeteiröl. [Useful Minerals and Rocks of Transylvania.] *Ertesitö Kolozsv. Orv. Termész. Tudom. Tars.* [1877.]

Krukenberg, C. F. W. [Trachylyte, Hyalomelan, Basalt Glass, Porous and Spherulitic Basalt, and Obsidian.] *Tubingen,* 1877. Résumé by **Prof. Mohr** in *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiv. *Sitz.* pp. 213–219. [1877.]
Describes rocks from Hawaii, &c.

Lang, H. O. Grundriss der Gesteinskunde. [Sketch of Petrology.] Pp. 289. 8vo. *Leipzig*, 1877.

Laube, Dr. G. C. [Phonolite-Pitchstone in Bohemia.] *N. Jahrb.* 1877, pp. 184, 185.
Describes a rock from the Weipert district.

Luca, S. de. Ricerche Chimiche sopra una Sostanza Lignosa trovata nel Tufo Volcanico. [Ligneous Matter in Volcanic Tuff.] 4to. *Naples*, 1874.

——. Sulla Presenza del Litio nelle Terre e nell' Acque della Solfatara di Pozzuoli. [Occurrence of Lithium in the Rocks and Waters of the Pozzuoli Solfatara.] 4to. *Paris*, 1875.

——. Prime Ricerche Chimiche eseguite sopra talune Materie raccolte in una Fumarola del Cratere Vesuviano. [Substances from a Vesuvian Fumarole.] 4to. *Naples*, 1876.

Macpherson, J. Sobre los caractéres petrográficos de las Ofitas de las cercanías de Biarritz. [Petrological Characters of the Biarritz Serpentines.] *An. Soc. Españ. Hist. Nat.* vol. vi. p. 7. [1877.]

Michel-Lévy, A., and **H. Douville.** Note sur le Kersanton. *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 51–58, pl. i. [1877.]
Kersanton consists of triclinic felspar, black magnesian mica, a chloritic mineral, and quartz paste; apatite and calcite being also generally present. The rock approaches micropegmatite. W. H. D.

Möhl, H. Ueber Olivinfels. [Olivine-rock.] *Hamburg*?, 1877, or before.

Moesta, Dr. Ueber ein neues Gestein der Diabas-Gruppe aus dem hessischen Hinterland. [New Diabase Rock, Hesse.] *Sitz. Ges. Beford. gesammt. Nat. Marburg*, 1876.

Mohr, Prof. [Origin of Trachyte from Basalt.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Sitz.* pp. 139–143. [1874.]

Muck, Dr. F. ~~Chemische Beiträge zur Kenntniss der Steinkohlen. [Chemical Treatise on Coal.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. pp. 267–307. [1876.] See **Schondorff**, p. 230.~~

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see Errata
p. xxx.

Oebbeke, Konrad. Ein Beitrag zur Kenntniss des Palæopikrits und seiner Umwandlungsprodukte. [Palæopikrite and its Alteration-Products.] Inaugural Dissertation. Pp. 38, map, 2 pls. 8vo. *Würtemberg*, 1877.
Describes, with analyses, two olivine-rocks from near Dillenburg, Nassau.

Quiroga y Rodriguez. Ofita de Pando (Santander). [Serpentine of Pando.] *An. Soc. Españ. Hist. Nat.* t. v. pp. 14. [1876.]

These serpentines, like those of Cadiz, are pyroxenic.

Rath, G. vom. [Notes on Rocks and Minerals.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Sitz.* pp. 100–102, 118, 170-173. [1874.]

Erratic granite, &c., Königsberg; Norwegian rocks; Vesuvian lava; Quartz-twin, Japan.

——: [Quartz-Diorite Porphyry of Quenast, Belgium, and Plagioclase-Trachyte, Perlenhardt, Transylvania.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Sitz.* pp. 57–60. [1875.]

——. [Monzoni, S. E. Tyrol.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Sitz.* pp. 85–124. [1875.]

Describes many rocks, giving analyses. See GEOLOGICAL RECORD for 1875, p. 219.

Renard, Prof. A. L'analyse microscopique des roches et les enclaves des minéraux. [Microscopic Analysis of Rocks and Mineral Enclosures.] *Rev. Quest. Sci.* t. i. [1877.]

Deals with the first principles of microscopic research as applied to mineralogy and petrology. Gives some account of the materials for these studies exhibited in the Loan Collection at S. Kensington, and particulars of recent researches upon the microscopic enclosures in various minerals, and upon the nature of spontaneously-moving bubbles in fluid lacunæ. F. R.

Roussel-Bouchet, V. Des rapports présumés existant entre les laves basaltiques et leur point d'éruption suivant leur richesse en titane et en vanadium. *Compt. Rend. Assoc. Franç.* sess. 5, pp. 418–421, (see also pp. 325, 326). [1877.]

Gives an analysis of basaltic lava from Auvergne, criticises the analyses of von Lasaulx and Kossmann, and notes the presence of titanium and vanadium. W. W.

Safařik, Fr. [Quartz-trachyte of Sar Sz. Miklos (Alba).] *Földt. Közl.* vol. v. [1875.]

Scacchi, A. Sopra un masso di Pomici soldate per fusione trovato in Pompei. [Fused Pumice, Pompeii.] 4to. *Naples*, 1877.

Schondorff, Dr. A. Zu den "chemischen Beiträgen zur Kenntniss der Steinkohlen" von Herrn Dr. F. Muck. [On Dr. F. Muck's treatise.] See above. *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Corr.-Blatt*, pp. 138–140. [1876.]

Stelzner, Alfred. Ueber Kalksteine und Kalkphosphate von Curaçao. [Limestone and Phosphate of Curaçao.] *Verh. bergm. Ver. Freiburg*, 1876.

Svedmark, E. Vestgötabergens Trapp. [Trap of W. Götaberg.] 8vo. *Upsal*, 1875.

Szabó, Dr. Josef. [Microscopic Examination of some Characteristic Volcanic Rocks of Hungary and Servia.] *Földt. Közl.* vol. vi. [1876.]

——. [Eruptive Iron-bearing Rocks of Moravicza.] *Ibid.* See post, **Veszely.**

——. A Glaukophan trapp. Nehány más Köz es Lauriumban. [Glaucophane Trap and some other Rocks from Laurium, Greece.] *Ibid.*

This green rock is a diorite, in which amphibole is changed into smaragdite, and biotite into glaucophane.

——. Classification of Trachytes. (*Mag. Tud. Akad.*) *Lit. Ber. Ungarn*, Bd. i. p. 374. [1877.]

——. [The Hornstone of Szarvasko an Olivine-Gabbro.] *Földt. Közl.* vol. vii. pp. 12. [1877.]

——. [Wehrlite of Szarvasko.] *Földt. Közl.* vol. vii. 1877.

Wehrlite is a gabbro of magnetite, amphibole, anorthite, and augite, with sometimes olivine and diallage in place of the last two. W. H. D.

Tóth, Mihály. Az erdélyi bazaltokról. [Transylvanian Basalt.] *Földt. Közl.* köt. v. [1875], and (? continuation or reprint) *Budapest*, 1876.

Urba, Dr. K. Ueber die mineralogische Zusammensetzung der Laven von den Kaymenen im Golfe von Santorin. [Lavas of Santorin.] *Lotos*, Feb. 1875.

The lava contains plagioclase, quartz, augite, hornblende, and olivine.

Vallée-Poussin, Ch. de la, and Rev. A. Renard. Note sur un fragment de roche tourmalinifère du poudingue de Bousalle. [Tourmaline-rock in Belgian Devonian Conglomerate.] *Bull. Ac. R. Belg.* sér. 2, t. xliii. pp. 359–372, plate. Report by **Dupont**, pp. 333–335. [1877.]

Consists of tourmaline-prisms with micaceous and chloritic flakes in a matrix of quartz.

Veszely, Gusztav. Moravicza-vaskö Eruptiv Közetei. [Moravicza Iron-bearing Eruptive Rocks.] *Földt. Közl.* 1876.

Wichmann, A. Mikroskopische Untersuchung über die Sericit-Gesteine des rechtsrheinischen Taunus. [Microscopic Examination of the Sericite Rocks of the Taunus on the Right Bank of the Rhine.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiv. pp. 1–28. [1877.]

Describes the microscopical structure of sericite, sericite-slate, sericite-gneiss, porphyritic gneiss, phyllite-quartzite slate, sericite-adinole slate, and sericite-augite slate. W. H. D.

Zirkel, Prof. F. [Augite-Andesite, Transylvania.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Corr.-Blatt*, pp. 127, 128. [1876.]

——. Ueber die krystallinischen Gesteine längs des 40. Breitegrades in Nordwest-Amerika. [Crystalline Rocks of the 40th Parallel of N.W. America.] *Sitz. k. sächs. Ges. Wiss.* 1877, pp. 156–243. See notice of the full Report in Geological Record for 1876, p. 218.

METEORITES.

Brezina, A. Bericht über einen zu Dhulia, Hindostan, im November 1877 gefallenen Meteorstein. [Meteorite which fell at Dhulia, Hindostan, &c.] *Anz. k. Ak. Wiss. Wien*, Bd. xv. pp. 213, 214.

Buchner, Dr. O. Ueber den Meteorstein von Hungen und über Meteoriten im allgemeinen. [Meteorites of Hungen, and Meteorites in general.] *Osterprogramm des grossherzogl. Realschule zu Giessen.* 4to.

Cohen, E. Ueber den Meteoriten von Zsádány Temesvar Comitat, Banat. [Meteorite of Zsádány, Banat.] *Verh. nat. med. Ver. Heidelberg*, n. F. Bd. ii. Heft ii.

Gümbel, Dr. C. W. Ueber die in Bayern gefundenen Steinmeteoriten. [Meteorites found in Bavaria.] *Sitz. k.-bay. Ak. Wiss. München*, p. 14.

Hauenschild, H. Ueber die rundlichen Eindrücke an der Oberfläche der Meteoriten. [Rounded Impressions on the Surface of Meteorites.] *Verh. k.-k. geol. Reichs.* pp. 172–175.

Gives details as to an exact experimental reproduction of the characteristic surface-hollows of meteorites by means of streams of air directed at a great velocity upon red hot matter. Concludes thus: *aër cavat lapidem non vi sed saepe cadendo.* G. A. L.

Hiriakoff, M. Undersökning af en meteorit, funnen i närheten af Berdjansk. [Investigation of a Meteorite found in the Neighbourhood of Berdjansk, Russia.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 72, 73.

Makowsky, —, and G. Tschermak. Bericht über den Meteoritenfall bei Tieschitz in Mähren. [Meteorite-Fall, Moravia.] 5 pls. 4to. *Vienna.*

Mallet, J. W. On a fourth mass of Meteoric Iron from Augusta County, Virginia. *Amer. Journ.* ser. 3, vol. xv. pp. 337, 338.

The history of the mass is obscure; but it probably fell near Staunton, whence three other masses have been described; this weighed 150 pounds. It contained Fe 91·4, Ni 7·5, with small quantities of Co and other metals. T. G. B.

Meunier (Stanislas). Recherches expérimentales sur les fers nickélés météoriques: mode de formation des syssidères concrétionnées. [Experiments on Nickeliferous Meteoric Irons; Origin of Concretionary Meteorites.] *Bull. Assoc. Sci. Franç.*, and *Compt. Rend.* t. lxxxvii. pp. 855–857.

Nordenskiöld, A. E. Mineralogiska bidrag. [Mineralogical Notes.] VI. Three remarkable Aerolites observed in Sweden during the years 1876 and 1877.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 45–61, 2 plates; pp. 73–85 and 88–95, 3 plates; pp. 117–156, 3 plates.

Account of the aerolite-fall at Ställdalen Railway Station, of that on the lake Vener, both in 1876, and of the aerolite (Luleå) seen over a great part of Sweden and Finland in 1877. From the first fall several analyses of the fallen stones are given, and comparisons with the composition of other known meteorites are made; of the second and third a number of notices are given, obtained through persons who happened to observe the phenomena in different parts, and a combination, declaration, and description of the facts given. Four plates (maps) show the distribution of the Ställdal and Vener falls as well as the localities from where the three aerolites were observed; the others contain figures of the latter ones as seen from different localities. The aerolite of Luleå is very remarkable for the long time during which it was visible.
E. E.

Cancel
Errata, p. xxx.
Geo. Record
1877. p. 220.

~~**Prendel, R.** Le Météorite de Vavilooka. *Mém. Soc. nat. Sci. nat. Cherbourg,* t. xxi. p. 205.~~
~~Fell in Cherson, 1876. Analysis shows it to be a Chondrite.~~

Schroeckinger, J. von. Ein falsches Meteoreisen. [A false Meteoric Iron.] *Verh. k.-k. geol. Reichs.* pp. 360, 361.

Regards as pig-iron a mass described as a meteorite by Prof. Ad. Pöllner, found in 1877 in the Ziegenrücken Wood near Elbogen.

Silvestri, Prof. O. Ricerche chimicografiche sopra le piogge rosse e le polveri meteoriche della Sicilia in occasione di grande burrasche atmosferiche. [Analysis of the Red Rain and Meteoric Dust of Sicily.] *Atti Ac. Gioen. Sci. Nat.* ser. 3, t. xii.

Tschermak, G. Berichte über den Meteoritenfall von Tieschitz in Mähren. [Notice of a Meteorite Fall at Tieschitz in Moravia.] *Anz. k. Ak. Wiss.* vol. xv. p. 215.

Winkler, C. Die Untersuchung des Eisenmeteorits von Rittersgrün. [Examination of the Rittersgrün Meteoric Iron.] *Nova Acta Ac. Cæs. Leop.-Car.* t. xl. p. 331.

See also:—

Chancourtois, —. Nickeliferous Iron: p. 270.

Smith, J. L. Daubrélite in Meteoric Irons: p. 264.

SUPPLEMENT FOR 1874–1877.

Döll, E. Der Meteorsteinfall von Soko-Banja, nordöstlich von Aleksinač, am 13. Oct. 1877. [Meteorite Fall in Servia, 1877.] *Verh. k.-k. geol. Reichs.* 1877, pp. 283–287.

Notes the character of the meteorites.

Geinitz, Dr. F. E. Der gegenwärtige Standpunkt unserer Kenntniss der Meteoriten. [State of our Knowledge of Meteorites.] *Leopoldina*, Bd. xiii. pp. 16. [1877.]

Goll, H. Le Grand Météore de Iowa (Amérique du Nord). [Iowa Meteorite.] *Bull. Soc. Vaud. Sci. Nat.* sér. 2, vol. xiv. pp. 576–584. [1877.]

Extract from notice by **G. Heinrichs** of the Meteorite of Feb. 10, 1875, giving an account of the flight, analysis of the meteorites, and considerations as to the origin of meteorites in general. W. H. D.

Gurlt, Dr. [Meteorites of Olden Time and Recent Supposed Meteoric Iron-masses.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Sitz.* pp. 189, 190. [1875.]

Krenner, Dr. J. [Meteorite-Fall of Zsádány (Temesvar).] *Térmész. Közlony*, köt. vii. [1875.]

Müller, Prof. Albrecht. Die Meteorsteine. [Meteorites.] 8vo. *Basle*, 1876.

Niessl, G. v. Ueber Feuermeteore. [Fiery Meteors.] *Verh. nat. Ver. Brünn*, Bd. xii. pp. 39, 58. [1874.]

——. Beiträge zur kosmischen Theorie der Meteoriten. [Cosmic Theory of Meteorites.] *Sitz. k. Ak. Wiss. Wien*, Bd. lxxv. p. 783. [1877.]

Possner, H. Meteoreisen vom Bemdêgos in Brasilien. [Meteoric Iron from Bemdêgos, Brazil.] 8vo. *Bamberg*, 1876.

Than, Dr. Karoly. A knyahinai Meteorkö mennyileges Vegyelemzese. [Quantitative Chemical Analysis of the Knyahin Meteorite.] *Ertek. Termész. Kör.* köt. vi. sz. vi. pp. 8. [1875.]

MINERALOGY.

Sub-Editor F. W. Rudler, F.G.S.

[In preparing abstracts of mineralogical papers it has been thought right to adhere as far as possible to whatever system of nomenclature, chemical notation, and crystallographic formulæ may have been used by the authors. No attempt has therefore been made to secure uniformity on these points. Where two or more symbolical expressions for the same thing have been used, the first has generally been taken. In some cases exceptions to the foregoing rules have been made to avoid typographical difficulties.]

Achiardi, Prof. Antonio d'. Sull' origine dell' Acido Borico e dei Borati. [Origin of Boracic Acid and Borates.] *Atti Soc. Tosc. Sci. Nat.* vol. iii. pp. 252–273, and, in German, *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 160–166, with an Appendix by **Rammelsberg.** See also **Becchi,** p. 187.

Reviews the theories of Dieulafait and others, quoting analyses of the gases evolved from the Tuscan soffioni, and of boracic and sulphatic minerals, concluding that borates may be produced in various ways.

Rammelsberg concludes that the presence of HCl in fumaroles of Vulcano, and its absence from the soffioni of Tuscany, suggest that sea-water has gained access to the heated depths in the former locality, but that neither the sea-water nor any deposit of rock-salt is concerned in the reactions in the other case. W. H. D.

——. Sulla Calcite della Punta alle Mele fra S. Ilario e S. Piero nell' Isola d' Elba. [Calcite of Elba.] *Atti Soc. Tosc. Sci. Nat.* vol. iii. pp. 326–329.

Crystallographic measurements.

Allen, A. H. Some Recent Improvements in the Metallurgy of Nickel. *Journ. Soc. Arts*, vol. xxvi. no. 1318, p. 243.

Gives analyses of 11 ores (silicates), and a description of those from New Caledonia, pp. 243–245.

Anon. Phosphates de Chaux de la France. Analyses au Bureau d'Assai de l'Ecole des Mines de 1845 à 1877. Pp. vi, 38. 4to. *Paris.*

Gives the p. c. of phosphoric acid and tribasic phosphate of lime in 174 specimens from 18 Departments of France, with the Canton, Commune, and date for each specimen. W. T.

Anon. [**John Lester.**] Lecture on Iron. *Coll. Guard.* vol. xxxvi. p. 995.

Mentions the various ores, their distribution, and composition.

Arzruni, A. Krystallographisch-chemische Untersuchung einiger Arsenkiese. [Crystallo-chemical examination of Arsenical Pyrites from Binnenthal, Hohenstein, Marienberg, Freiberg, Ehrenfriedersdorf, Reichenstein, Mitterberg near Mühlbach, Joachimsthal.] *Zeitsch. Kryst. Min.* Bd. ii. Hefte iv., v. pp. 430–444.

Baret, —. Tourmalines bleues, vertes et roses dans un filon de pegmatite du granite d'Orvault. [Blue, green, and rose-coloured Tourmalines in a Vein of Pegmatite of the Orvault Granite.] *Bull. Soc. Min. France*, no. 4, pp. 71, 72.

Bauer, Max. Mineralogische Mittheilungen. 2. Fortsetzung. [Continuation of Mineralogical Communications.] *Zeitsch. deutsch. geol. Ges.* Bd. xxx. pp. 283–326, plate.

Study of the crystallographic characters of cyanite.

——. Ueber das Krystallsystem und die Hauptbrechungs-Coëfficienten des Kaliglimmers. [Crystalline System and principal Coefficients of Refraction of Potash-Mica.] *Min. Petr. Mitth.* Bd. i. pp. 14–39.

——. Ueber den Hydrohämatit von Neuenbürg. [Hydrohæmatite of Neuenbürg.] *Jahresh. Ver. nat. Württ.* Bd. xxxiv. pp. 392–396.

Hydrohæmatite occurs in the iron-lodes of Neuenbürg, where it is associated with brown iron-ore, which it much resembles externally, but from which it differs in its blood-red streak. F. W. R.

Baumhauer, H. Zur Frage nach dem Krystallsystem des Harmotoms. [In what System does Harmotome crystallize?] *Zeitschr. Kryst. Min.* Bd. ii. Heft ii. pp. 113–116; 5 figs.

No conclusive results being obtained by etching with hydrofluoric acid, sections were examined by polarized light; and some of the results were characteristic of the rhombic rather than the monoclinic system. T. W. D.

——. Aetzversuche an Quarzkrystallen. [Experiments in Etching Quartz-crystals.] *Zeitschr. Kryst. Min.* Bd. ii. Heft ii. pp. 117–125; 8 figs.

The first part treats of the production of crystal faces by etching-agents, the second of the production of etched figures and of macles [Verzwilligung]. The etching-agent is fused caustic potash.

T. W. D.

——. Bemerkungen zu der Abhandlung des Herrn J. Hirschwald: "Ueber unsere derzeitige Kenntniss des Leucit-Systems." [On

Hirschwald's Memoir on the Leucite System.] *Min. Petr. Mitth.* Bd. i. pp. 287, 288.

Purely crystallographical.

Becchi, Emilio. Sulla Hofmannite. *Atti R. Ac. Linc.* ser. 3, *Trans.* vol. ii. p. 135.

Describes a hydrocarbonate from the lignite of Casino.

Bertrand, M. E. Sur la leadhillite de Matlock. *Compt. Rend.* t. lxxxvi. pp. 348–350.

The Leadhillite recently obtained from Matlock appears to be crystallographically identical with the mineral from the older-known localities of Leadhills, Sardinia, and Siberia. F. W. R.

——. De l'application du microscope à l'étude de la minéralogie. [Application of the Microscope to the Study of Mineralogy.] *Bull. Soc. Min. France*, no. 2, pp. 22–28; no. 6, pp. 96, 97.

——. Note sur l'andalousite du Brésil et sur les rubis de Siam. [Andalusite of Brazil, and Rubies of Siam.] *Bull. Soc. Min. France*, no. 6, pp. 94, 95.

Some rolled green crystals, strongly dichroic, from Brazil are found to be andalusite. Many of the rubies lately found at Battambang, in Siam, exhibit the optical characters of biaxial crystals. F. W. R.

Besnard, Dr. Anton. Die Mineralogie in ihren neuesten Entdeckungen und Fortschritten im Jahre 1877. [Mineralogy in 1877.] *Corr.-Blatt zool.-min. Ver. Regensburg*, Jahrg. 32, pp. 9–30.

A continuation. See Geological Record for 1877, p. 226.

Blomstrand, C. W. Titaniter från Småland, jemte några anmärkningar om dylika mineraliers undersökning. [Titaniferous Minerals from Småland, in Sweden; with remarks on the Examination of such Minerals.] *K. Fys. Sällsk. Lund Minnesskr.* no. 3, pp. 1–41.

Gives analyses and description of Hydroilmenite, Alsnedite (Titanite), and Polycrase (Euxenite), as well as an account of the method of analysis. E. E.

Bolton, H. Application of Organic Acids to the Examination of Minerals. *Chem. News*, vol. xxxvii. pp. 14, 24, 25, 65–67, 86, 87, 98, 99, 148–150. [See Geological Record for 1877, p. 226.]

Organic acids, resulting from the natural decomposition of animal and vegetable matter, may attack and decompose certain mineral constituents of rocks. F. W. R.

——. Behaviour of Natural Sulphides with Iodine and other Reagents.] *Ann. N. York Acad. Sci.* vol. i. pp. 153–159.

Bořický, Prof. Erklärung über Dr. C. O. Cech's "Notizen zur Kenntniss des Uranotil." [Explanation respecting Dr. Cech's paper on the History of the Discovery of Uranotile.] *Verh. k.-k. geol. Reichs.* pp. 353, 354.

A controversial note (see **Cech**, p. 241).

Bowron, W. M. The Practical Metallurgy of Titanic Iron-Ores. *Metallurgical Review* (*N. Y.*), vol. ii. p. 309; Abstract in *Proc. Inst. Civ. Eng.* vol. lvi. pp. 355, 356.

Analyses of ores (magnetites and hæmatites) from North America and Norway.

Braun, Max. [Zinc-ores of Laurium.] *N. Jahrb.* Heft ii. pp. 188–191.

Descriptions of the minerals occurring in the deposits of these zinc-ores, viz. zinc-spar, calcite, gypsum, fluor-spar, aragonite, galena, blende, traces of copper-pyrites, cuprite, brown iron-ore, psilomelane, cerussite, mimetesite, adamite, olivenite, arseniosiderite, azurite, malachite, aurichalcite, halloysite, and allophane. F. W. R.

Brögger, W. C. Untersuchungen norwegischer Mineralien. [Norwegian Minerals.] *Zeitsch. Kryst. Min.* Bd. ii. Heft iii. pp. 275–290, plate.

1. Crystallographical system of Mosandrite; 2. Crystallographical system of Astrophyllite; 3. Thomsonite from a new locality (Låven).

Bronner, Prof. Ueber einige fossile Harze vom Libanon. [Fossil Resins from the Lebanon.] *Jahresh. Ver. nat. Württ.* Bd. xxxiv. pp. 81–90.

Describes various resins collected in the S. Lebanon. They are like amber, but much more brittle. Gives elementary analyses, and compares them with those of amber and schraufite. F. W. R.

Bruns, H. D. On the Chemical Character of Silaonite from Guanajuato, Mexico. *Chem. News*, vol. xxxviii. p. 109.

Silaonite is a mixture and not a definite species, Bi_3Se.

Brush, Prof. G. J. Manual of Determinative Mineralogy and Blowpipe Analysis. 3rd edition, transl. into the New System. 8vo. *New York.* See notice of earlier edition in the GEOLOGICAL RECORD for 1875, p. 233.

Brush, Prof. G. J., and E. S. Dana. On a new and remarkable Mineral Locality in Fairfield County, Connecticut, with a description of several new species occurring there. *Amer. Journ.* ser. 3, vol. xvi. pp. 33–46, 114–123, woodcuts; and, in German, in *Zeitsch. Kryst. Min.* Bd. ii. Heft vi. pp. 529–551; 6 woodcuts.

6 new species are described from a vein of granite rich in albite:—*Eosphorite*, a hydrous phosphate of aluminium and manganese, of sp. gr. 3·134, occurring massive and in orthorhombic crystals, isomorphous with childrenite; named from its pink colour. *Triploidite*, a hydrous

phosphate of manganese and iron, of sp. gr. 3·697, crystallizing in the monoclinic system; named from its resemblance to triplite. *Dickinsonite*, a hydrous phosphate of manganese, iron, calcium, and sodium, of sp. gr. 3·34; crystallizes in the monoclinic system, but crystals are rare. *Lithiophilite*, a phosphate of lithium and manganese, analogous to triphylite (Mn replacing Fe), sp. gr. 3·43; no crystals found; named from *lithium* and *φίλος*. *Reddingite*, a hydrous phosphate of manganese, of sp. gr. 3·102; crystallizes in the orthorhombic system; named from the locality. *Fairfieldite*, a hydrous phosphate of manganese and calcium, of sp. gr. 3·15; named after its locality. F. W. R.

Bücking, Hugo. Mikroskopische Untersuchung der Türkis. [Microscopical Examination of Turquoise.] *Zeitsch. Kryst. Min.* Bd. ii. Heft ii. pp. 163–168.

The examination of Persian turquoise ("persischer Türkis" of commerce) proves it to be a natural product, and shows that it is probably identical with the turquoise found at Nichatur. T. W. D.

——. Ueber die Krystallformen des Epidot. [Crystallographical Forms of Epidote.] *Zeitsch. Kryst. Min.* Bd. ii. Hefte iv. & v. pp. 321–415; 3 pls.

——. Nachtrag zu den "Krystallographischen Studien am Eisenglanz und Titaneisen vom Binnenthal." [Supplement to "The Crystallography of Specular Iron and Titanic Iron-ore from Binnenthal."] *Zeitsch. Kryst. Min.* Bd. ii. Hefte iv., v. pp. 416–424; 3 figs. [See GEOLOGICAL RECORD for 1877, p. 228.]

——. Freieslebenit von Hiendelaencina (Spanien). [Freieslebenite from Hiendelaencina, Spain.] *Zeitsch. Kryst. Min.* Bd. ii. Hefte iv., v. pp. 425–427; 3 figs.

Crystallography of the mineral.

Burghardt [or **Burckhardt**], **Dr. C. A.** The Origin of some Ores of Copper. *Chem. News,* vol. xxxvii. p. 215, and *Proc. Manch. Lit. Phil. Soc.* vol. xvii. pp. 27–36, 151–154; reprinted in *Mem. Lit. Phil. Soc. Manch.* ser. 3, vol. vi. 1879.

Prepared an uncrystallized substance having the composition of *Atacamite* by the action of solution of sodium chloride on cuprous oxide. The solution takes up oxygen from the air, forming cupric oxychloride and cupric chloride. It is probable that Atacamite is so formed in nature. Gives analyses of Atacamite. F. W. R.

——. Note on the Occurrence of Dioptase on Chrysocolla from Peru. *Chem. News,* vol. xxxvii. p. 223, and *Proc. Manch. Lit. Phil. Soc.* vol. xvii. pp. 155, 156.

Records the occurrence of dioptase in Peru, being the first instance of its occurrence out of Russia, and the first example of its association with chrysocolla. It was probably formed by the action of water on the chrysocolla. F. W. R.

Cech, Dr. C. O. Notiz zur Kenntniss des Uranotils. *Verh. k.-k. geol. Reichs.* pp. 211, 212.

Gives details as to the discovery and a description of uranotile, showing that it is essentially an Austrian find.

Chester, A. H. Note on the Crystallization of Variscite. *Amer. Journ.* ser. 3, vol. xv. p. 237, woodcuts.

Crystals usually in complicated groups, sometimes forming sheaves. Single prismatic crystals are rare; they belong to the orthorhombic system; figure given. W. H. D.

Collins, J. H. On Mineral Classification. *Min. Mag.* vol. ii. no. 9, pp. 65–81.

Discusses the definition of a mineral *species*. Proposes to group all species in 9 *classes*, as follows:—Elements, pyritoids, haloids, oxides, spathoids, plethoids (πλῆθος, *a crowd*), brithoids (βριθὺς, *heavy*), silicates, and hydrocarbons. Gives details of grouping in the classes of elements and pyritoids. F. W. R.

——. Preliminary Note on Penwithite, a new Cornish Mineral. *Min. Mag.* vol. ii. no. 9, p. 91.

Penwithite is a hydrous manganesic silicate from the district of Penwith, in W. Cornwall.

——. Note on Cornish Mineral Localities. *Min. Mag.* vol. ii. no. 9, pp. 92–94.

Cites new Cornish localities for Scheelite, Montmorillonite, and Millerite. Summarizes the distribution of minerals in the Hensbarrow granite area. F. W. R.

——. Mineralogy.—Vol. I. The General Principles of Mineralogy. 8vo. *London* and *Glasgow.* Pp. 206; 579 figures.

The first two chapters are introductory; then follows an account of the general properties of crystals, and of the methods of representing crystal forms. Each crystallographical system is discussed in detail, and chapters are devoted to Macles and Irregular Crystals, to Dimorphism, Pseudomorphism, and Petrefaction, to the use of the Goniometer, &c. The remaining chapters contain descriptions of the chief physical properties and chemical characters of minerals, and of their paragenesis and artificial preparation. A collection of 165 examination questions is appended. T. W. D.

——. Catalogue of the Non-metallic Minerals in the Museum of the Royal Institution of Cornwall. *Journ. R. Inst. Cornwall,* no. 19, pt. 2, Appendix, pp. 1–60.

Cornu, A. Sur la cause possible d'une erreur dans les mesures goniométriques. [Possible Cause of an Error in Goniometric Measurements.] *Bull. Soc. Min. France,* no. 3, pp. 35–37.

Corsi, Arnaldo. Su alcune prehniti della Toscana. [Tuscan Prehnites.] *Bol. R. Com. geol. Ital.* vol. ix. pp. 54–71.

Describes the crystalline form, chemical composition, &c. of four varieties, and of prehnite from Elba.

Cossa, Prof. A. Ricerche chimiche sui minerali e roccie dell' isola di Vulcano. I. Allume potassico contenente tallio, cesio e rubidio. [Potash-alum with Tl, Cs, and Rb from Vulcano.] *Atti R. Acc. Linc.* ser. 3, *Trans.* vol. ii. pp. 34, 35.

The principal source of alum in Vulcano is in the grotto of Taraglione and in the great crater. A compact white rock in the part of the crater called La Schicciola contains a potash-alum which gives indications of thallium in the spectroscope; the less soluble crystals separated by repeated crystallization show not only the Tl line, but the lines α and β of cæsium and rubidium. W. H. D.

Dalmer, Dr. Karl. Die Feldspathpseudomorphosen der Wilhelmsleite bei Ilmenau. [Felspar Pseudomorphs from Wilhelmsleite.] *N. Jahrb.* Heft iii. pp. 225–264.

Analyses of the pseudomorphs lead to the conclusion that they contain 46 p. c. of carbonate of lime, 13 of iron-ochre, 4·5 of a silicate decomposed by hydrochloric acid, 10 of a silicate decomposed by sulphuric acid, and 21 of free silica. Discusses the chemical reactions involved in the alteration. F. W. R.

Damour, —. Sur le Freyalite. *Bull. Soc. Min. France*, no. 3, pp. 33–35.

Freyalite is Esmark's name for a mineral from Brevig, in Norway. Damour's analysis gives:—silica 20·02, ceroso-ceric oxide 28·80, oxide of lanthanum and didymium 2·47, thoria 28·39, alumina and zirconia (?) 6·31, ferric oxide 2·47, mangano-manganic oxides 1·78, potash and soda 2·33, water 7·4, volatile matters 0·82 p. c. F. W. R.

——. Note sur le spinelle zincifère (Gahnite) du Brésil. [Zinciferous Spinel of Brazil.] *Bull. Soc. Min. France*, no. 5, pp. 93, 94.

Occurs in the diamond-bearing sands of Brazil, and has been mistaken for emerald. Analysis gives alumina 59·41, oxide of zinc 33·82, ferrous oxide 6·17. F. W. R.

Dana, J. D. Manual of Mineralogy and Lithology. Ed. 3. *New York.* Pp. 474. 12mo.

Practically a new work.

Davies, T. Note on Jadeite and Jade. *Geol. Mag.* dec. ii. vol. v. p. 192.

Printed from Keller's 'Lake Dwellings' (see *post*, MISCELLANEOUS).

Des Cloizeaux [**Prof. A.**]. Sur l'existence et sur les caractères optiques, crystallographiques et chimiques du Microcline, nouvelle espèce de Feldspath triclinique à base de potasse. [Optical, Crystallographic, and Chemical Characters of Microcline, a new Triclinic Potash Felspar.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 508–515; and, in Norwegian, in *Nyt Mag. Nat.* Bd. xxiv. pp. 298–305.

Full characters, analyses, localities, &c. of microcline (*not* the microcline of Breithaupt, which is shown to be an orthose). See GEOLOGICAL RECORD for 1876, p. 334. G. A. L.

——. Sur un nouveau gisement de l'Adamine. [New D osit of Adamine.] *Compt. Rend.* t. lxxxvi. pp. 88–90.

Adamine has been found among the zinc-ores of Laurium.

——. [Topaz, Milarite, &c.] *N. Jahrb.* Heft i. pp. 40–46, 2 woodcuts.

Notes on the crystallization of topaz from Durango, in Mexico; on Milarite, which he suggests is rhombic, and not hexagonal; on Perowskite, with reference to Kokscharow's views; on the calcite of Bergen Hill; on the occurrence of tridymite in trachyte at the Rocher du Capucin, near Mont Dore; and on the Forchesite of St. Nectaire. F. W. R.

——. [Milarite, Adamine, Pandermite, Mica.] *N. Jahrb.* Heft iv. pp. 370–374; 7 woodcuts.

An optical study of Milarite and other minerals.

——. Note sur un nouveau Feldspath barytique. [New Barytic Felspar.] *Bull. Soc. Min. France*, no. 5, pp. 84–86.

Describes the optical characters of a colourless felspar of unknown locality, found by Pisani to contain 7·3 p. c. of baryta.

Des Cloizeaux, —, and **Damour**, —. Note sur la Cabrerite du Laurium. [Cabrerite of Laurium.] *Bull. Soc. Min. France*, no. 5, pp. 75–77.

Dana's Cabrerite is found in small veins and nests in a magnesian limestone in the calamine-mines of Laurium. It agrees with the Spanish Cabrerite optically and chemically. Analysis given. F. W. R.

Dewalque, J. [Specimens of Calamine from Laurium.] *Ann. Soc. Géol. Belg.* t. v. pp. lxxxiii, lxxxiv.

1. Ferruginous Smithsonite, on which are small bosses of an arseniate (Adamite or Adamine) not known before in that form. 2. Stratiform Smithsonite, covered with bosses of Adamite. 3. Smithsonite, covered with azurite, on which is Adamite. 4. Smithsonite, somewhat similarly covered. W. W.

Doelter, C. Ueber Diopsid. [On Diopside.] *Min. Petr. Mitth.* Bd. i. pp. 49–70.

Conclusion of his memoir on augite (see GEOLOGICAL RECORD for 1877, p. 232). Gives analyses of diopside from Achmatowsk, the Zillerthal, N. York, Arendal, and Nordmark, of Baikalite from L. Baikal, and of Hedenbergite from Tunaberg. Concludes that the minerals of the pyroxene group are not simple combinations, but mixtures of isomorphous compounds. F. W. R.

——. Ueber Akmit und Aegirin. *Min. petr. Mitth.* Bd. i. pp. 372–386.

Original analyses of achmite and ægirine, with discussion of results.

——. Ueber Spodumen und Petalit. *Min. petr. Mitth.* Bd. i. pp. 517–538.

Analyses of spodumene and petalite, and views on the constitution of these species. Spodumene, when fresh and pure, has a composition similar to that of achmite and ægirine; but in the latter Na_2O is replaced by Li_2O, and Fe_2O_3 by Al_2O_3. Petalite stands to spodumene as albite does to anorthite, while Li_2, Al_2, and Si_2 mutually replace each other. F. W. R.

——. La Determinazione dei Minerali petrograficamente più importanti mediante il microscopio. [Micropetrographical Determination of the more important Minerals.] Translated from the original by **G. E. Pozzi.** *Turin.* [See GEOLOGICAL RECORD for 1876, pp. 204, 227.]

Doll, E. Notizen über Pseudomorphosen. [Pseudomorphs.] *Verh. k.-k. geol. Reichs.* p. 57.

Limonite after beryl in granite from Aschaffenburg, Dechenite after octahedra of galena from Niederschlettenbach, smaltite after baryta from Saxony. G. A. L.

Dowker, George. On Flint Stones, with an account of Banded Flints. 20 *Rep. East Kent Nat. Hist. Soc.* pp. 20–25.

Flints are often, indeed generally, associated with some organic substance, which in the first instance formed the nucleus round which the silica gathered; but that organic substance need not be present now. T. V. H.

Eger, L. Grundriss der Mineralogie für Bürgerschulen, höhere Lehranstalten und zur Selbstbelehrung. [Elements of Mineralogy.] Pp. 68. 8vo. *Vienna.*

Erhard, Theodor, and **Alfred Stelzner.** Ein Beitrag zur Kenntniss der Flüssigkeitseinschlüsse in Topas. [Fluid-enclosures in Topaz.] *Min. petr. Mitth.* Bd. i. pp. 450–458.

Field, F. On a Variety of the Mineral Cronstedite. *Phil. Mag.* ser. 5, vol. v. pp. 52–54.

An amorphous dark leek-green mineral associated with the Cornish Cronstedite was found on analysis to be a variety of this species. The following formula is suggested :—$3(FeO . SiO_2 . H_2O) + Fe_2O_3$.
F. W. R.

Firket, Adolphe. Sur une variété de quartz pulvérulent. [A Variety of Powdery Quartz.] *Ann. Soc. Géol. Belg.* t. v. pp. xc, xci.

From the upper part of the metalliferous bed of Rocheux-Oneux, in small hollows. Consists of pure anhydrous silica in the form of small angular grains of quartz.
W. W.

——. Découverte de la Millerite (Haarkies) au charbonnage du Hasard à Micheroux. [Discovery of Millerite at the Hasard Colliery, Micheroux.] *Ann. Soc. Géol. Belg.* t. v. pp. cxx, cxxi.

Occurs in long capillary crystals implanted on rhombohedra lining the walls of a geode in psammite.

Fischer, H. Mineralogisch-archäologische Studien. [Mineralogical and Archæological Studies.] *Mitth. anthrop. Ges. Wien*, Bd. viii.

Fouqué, —. Sur l'hypersthène de la ponce de Santorin. [Hypersthene of the Pumice of Santorin.] *Bull. Soc. Min. France*, no. 3, pp. 46–48.

Small brown transparent prisms of sp. gr. 3·485, obtained by treating the rock with hydrofluoric acid, are found by optical examination to be hypersthene. Their analysis is given.
F. W. R.

Fouqué, F., and A. Michel-Lévy. Reproduction des feldspaths par fusion et par maintion prolongé à une température voisine de celle de la fusion. *Compt. Rend.* t. lxxxvii. p. 700.

——, ——. Reproduction artificielle des feldspaths et d'une roche volcanique complexe (labradorite pyroxénique), par voie de fusion ignée et maintien prolongé à une température voisine de celle de la fusion. *Compt. Rend.* t. lxxxvii. p. 779.

——, ——. Réponse à une Note de M. Stan. Meunier, sur la cristallisation artificielle de l'orthose. *Compt. Rend.* t. lxxxvii. p. 830.

——, ——. Production artificielle de la néphéline et de l'amphigène, par voie de fusion ignée et recuit à une température voisine de la fusion. *Compt. Rend.* t. lxxxvii. p. 961.

Four papers on the production of felspar, pyroxenic labradorite, nepheline, and amphigene by fusion and long-continued heat.

Freda, G. Sulla presenza del moliddeno nella sodalite vesuviana. [Molybdenum in the Sodalite of Vesuvius.] 4to. *Naples.*

Fugger, Eberhard. Die Mineralien des Herzogthumes Salzburg. xi. *Jahres-Ber. k.-k. Ober-Realschule Salzburg,* pp. viii, 124, map.

Descriptive catalogue of the minerals of Salzburg, arranged under the following classes:—1. Elements; 2. Sulphur compounds; 3. Oxides; 4. Haloid salts; 5. Oxy-salts; 6. Organic compounds.
F. W. R.

Gamper, J. Alpine Phosphate. [Alpine Phosphates.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 611–618.

Gives descriptions and analyses of the Blauspath (=Lazulite) of Styria, and of the Lazulite of Zermatt.

Garnier, J. Sur la Garniérite. [Garnierite.] *Compt. Rend.* t. lxxxvi. pp. 684–686.

States that the numerons analyses made by Thiollier point to the formula (MgO . NiO)SiO_2+nHO, rather than to that given by Dana in ed. 5 of his Mineralogy. Gives analyses, and concludes that Garnierite is but the product of decomposition of sulphides or of arsenio-sulphides.
G. A. L.

Gaudin, A. Sur la structure de plusieurs Minéraux. [Structure of certain Minerals.] *Compt. Rend.* t. lxxxvii. pp. 66, 67.

——. L'harmotome et la stilbite. *Compt. Rend.* t. lxxxvii. pp. 1065–1068, woodcuts.

Geinitz, Dr. E. Ueber einige Variolite aus dem Dorathale bei Turin. [On some Variolites from Turin.] *Min. petr. Mitth.* Bd. i. pp. 136–152.

Genth, F. A. On some Tellurium and Vanadium Minerals. *Proc. Amer. Phil. Soc.* vol. xvii. no. 100, pp. 113–123. Translation of a paper noticed in the GEOLOGICAL RECORD for 1877, p. 234.

Göppert, H. R. Ueber quantitative Verhältnisse des Bernsteins. [Quantitative Relations of Amber.] *N. Jahrb.* Heft v. pp. 501–507.

Calculations as to the production of amber, and magnitude of the forests required to yield it.

Groth, [Prof.] P. Die Mineralien-Sammlung der Kaiser Wilhelms Universität Strassburg. Ein Supplement zu den vorhandenen mineralogischen Handbüchern. 4to. Pp. 271; 6 plates.

A description of the mineral collection of the University of Strassburg, with explanatory remarks on the specimens, forming a supplementary handbook of mineralogy. The Strassburg cabinets have been enriched by the *Jordan* collection, rich in Swiss minerals; the *Max Braun* collection, special in its zinc ores; and the *Perl* collection, famous for its Saxon specimens. F. W. R.

Gümbel, Dr. C. W. Hygrophilitähnliches Mineral aus dem Röthelschiefer der Rheinpfalz. [Mineral like Hygrophilite from the Red Slates of the Palatinate.] *N. Jahrb.* Heft iv. pp. 385–388.

An analysis by **A. Schwager** of a white substance occurring in embedded masses, shows that it stands near to Laspeyres' new mineral hygrophilite. Analyses of other white minerals resembling nacrite are also given. F. W. R.

——. Ueber die im stillen Ocean auf dem Meeresgrunde vorkommenden Manganknollen. [Manganese Nodules from the Bed of the Pacific Ocean.] *Sitz. k.-bay. Ak. Wiss.* pp. 189–209.

Nodules from a depth of 2740 fathoms, analyzed by **A. Schwager**, yielded 23·6 per cent. of hyperoxide of manganese, and 27·46 of peroxide of iron. The geological interest of these concretions is pointed out. F. W. R.

Gurney, H. P. Crystallography. Society for Promoting Christian Knowledge. Pp. 128; 46 figs. 8vo. *London.* Price 1*s.*

Gives a general introduction to elementary crystallography, and treats each system in detail. Miller's notation and nomenclature are adopted; two chapters are devoted to goniometry and the physical symmetry of crystals. T. W. D.

Hannay, J. B. On Youngite. *Min. Mag.* vol. ii. no. 9, pp. 88, 89.

Gives fresh analyses of the mineral called *Youngite*, confirming its right to be regarded as a substance of definite composition.

——. Note on the Artificial Formation of Pyrolusite. *Min. Mag.* vol. ii. no. 9, p. 90.

When manganous nitrate is dissolved in strong nitric acid and warmed, and potassic chlorate added, black oxide of manganese is precipitated. If the acid is very concentrated and the temperature only about 20°, and the mixture allowed to stand for some days, the precipitate exactly resembles native pyrolusite. F. W. R.

Hansel, V. Ueber Phosgenit von Monte Poni auf Sardinia. [Phosgenite from Monte Poni, Sardinia.] *Zeitschr. Kryst. Min.* Bd. ii. Heft iii. pp. 291, 292, woodcut.

Hardman, E. T. Further Researches on the supposed Substitution of Zinc for Magnesium in Minerals. *Proc. R. Irish Ac.* ser. ii. vol. iii. no. 2, pp. 146–150.

Gives a list of 20 specimens of rocks from various Irish localities, in all of which zinc is present, and often in very appreciable quantities.

Hardman, E. T. On *Hullite,* a hitherto undescribed Mineral; a Hydrous Silicate of Peculiar Composition, from Carnmoney Hill, Co. Antrim, with Analysis. With Notes on the Microscopical Appearances by **Prof. Hull.** *Proc. R. Irish Ac.* ser. ii. vol. iii. no. 2, pp. 161–167; and *Rep. Brit. Assoc.* for 1878, pp. 542, 543. [1879.]

Hullite, named after Prof. Hull, is a mineral resembling obsidian, occurring in a basalt rich in olivine. It is of peculiar composition, its analysis yielding alumina, ferric and ferrous oxides, manganous oxide, lime, and magnesia; sp. gr.=1·76. F. W. R.

——. The Application of Sonstadt's Solution to the Separation of Minerals for Chemical Analysis. *Chem. News,* vol. xxxvii. pp. 108, 109.

A mineral disseminated through an Irish basalt was readily separated when the powdered rock was placed in a solution of sp. gr. 2·4.

Harford, J. U. The Physical Characteristics of Minerals. *Trans. Watford Nat. Hist. Soc.* vol. ii. pp. 104–106. (Abstract of a Lecture.)

Harkness, Prof. —. On Cotterite, a new Variety of Quartz. *Min. Mag.* vol. ii. no. 9, pp. 82–84.

Cotterite has been found only in a quarry of Carboniferous Limestone at Rockforest, Co. Cork. It is a laminated variety of quartz, remarkable for its splendent lustre, between metallic and pearly. Named after Miss Cotter, of Rockforest, Co. Cork. F. W. R.

Hauer, Carl von. Krystallogenetische Beobachtungen. Nos. vii. and viii. [Crystallogenesis.] *Verh. k.-k. geol. Reichs.* pp. 185–189, 315–321. See also *Min. Mag.* vol. ii. no. 9, pp. 95, 96.

Gives examples showing how the colours of many crystals can be influenced artificially. Considers enclosures in crystals.

On the crystalline relations of Epsom salt, and on a derivate from the sulphate of magnesia and iron. G. A. L.

Haughton, Dr. S. On the Mineralogy of the Counties of Dublin and Wicklow. *Proc. R. Dublin Soc.* n. s. vol. i. p. 183; *Journ. R. Geol. Soc. Ireland,* n. s. vol. v. pp. 39–45; and in *Guide to the County of Dublin* (noticed above, p. 36).

Hautefeuille, P. Sur la reproduction des Feldspathes. [Artificial Felspars.] *Bull. Soc. Philomath. Paris,* sér. 7, t. ii. no. 1, pp. 62, 63.

Notes of experiments.

——. Etude sur la crystallisation de la silice par la voie sèche. [Crystallization of Silica by the Dry Way.] *Bull. Soc. Min. France,* no. 1, pp. 1–5.

Heddle, Prof. M. F. The County Geognosy and Mineralogy of Scotland. *Min. Mag.* vol. ii. no. 8, pp. 9–35; no. 10, pp. 106–133, woodcuts.

Commencement of a series of papers, giving the results of 25 years' work in exploring mineral localities and analyzing the minerals found. Describes the minerals of the Islands of Unst, Uya, Haaf-Grunay, Fetlar, and Yell. Gives many analyses. F. W. R.

——. On a new Manganesian Garnet. *Min. Mag.* vol. ii. no. 9, pp. 85–87.

Four kinds of garnet occurring in the granite of Glen Skiag and near Struay Bridge in Rosshire, and at Ben Resipol in Argyllshire, were found on analysis to have a similar composition, and to form a new variety. They contain an average of 13·69 p. c. of manganous oxide, and are described as *manganesious garnet.* F. W. R.

——. Chapters on the Mineralogy of Scotland. *Trans. R. Soc. Edin.* vol. xxviii. pp. 197–271, 299–319, 453–555; 2 plates and woodcuts.

On the Felspars of Scotland, with many analyses. Andesine, anorthite, and latrobite are first introduced as British minerals. A coloured plate shows a fine crystal of Amazon-stone from Tongue in Sutherlandshire.

On the Garnets of Scotland; and on the augite, hornblende, and serpentinous change. *Totaigite* is a new name applied to a product of alteration of an augitic mineral near Totaig, in Ross-shire. F. W. R.

Hirschwald, J. Ueber unsere derzeitige Kenntniss des Leucit-Systems. [Our Knowledge of the Leucite-system.] *Min. Petr. Mitth.* Bd. i. pp. 85–100, plate.

Hock, G. [Oxide of Manganese from Carboniferous Limestone, Andenne.] *Ann. Soc. Géol. Belg.* t. v. pp. cx, cxi.

Forms compact or earthy masses. Analysis shows oxides of manganese, carbonate of lime, peroxide of iron, combined silica, and a little clay. May be an impure altered diallogite, or a mixture of wad and calcite. Occurs in small fissure veins. The limestone is impregnated with manganese for some distance. W. W.

How, Henry. Contributions to the Mineralogy of Nova Scotia. *Min. Mag.* vol. iii. no. 10, pp. 134–141.

Describes the occurrence of *Steelite*, a new variety of Mordenite, found in spherical and nodular masses, embedded in clay and associated with stilbite, in cavities of a Triassic trap rock at Cape-Split in the Bay of Fundy. F. W. R.

Hull, Prof. E. A New Mineral from Carnmoney Hill, near Belfast, *Quart. Journ. Micr. Sci.* vol. xviii. p. 347.

Describes *Hullite*, n. sp. (see **Hardman**, p. 248).

Hull, Prof. E., and E. T. Hardman. Part i. On the Nature and Origin of the Beds of Chert in the Upper Carboniferous Limestone of Ireland. Part ii. On the Chemical Composition of Chert and the Chemistry of the Process by which it is formed. *Trans. R. Dublin Soc.* n. s. vol. i. pt. vii. pp. 71–94, pl. iii. Noticed, from another source, in the GEOLOGICAL RECORD for 1877, p. 202.

Hussak, E. Mikroskopische Beobachtungen. [Microscopic Observations.] *Min. petr. Mitth.* Bd. i. pp. 275–279, woodcuts.

The observations relate to the distribution of helminth, to polysynthetic twins of zircon, and to a blast-furnace slag from Eisenerz, in Styria. F. W. R.

Irby, J. R. M'D. On the Crystallography of Calcite. 8vo. *Bonn.* Pp. viii, 72, plate.

A critical study of the crystalline forms of calcite, being an extension of the author's essay on the scalenohedrons of calcite, which obtained the prize at the University of Bonn. F. W. R.

Issel, A. Rame nativo epigenico sopra un dente di squalo e frustoli di piante convertiti in Limonite. [Native Copper pseudomorphous after a Shark's tooth, and Frustules of Plants converted into Limonite.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 226–236, with woodcuts.

The fragment of shark's tooth, converted into copper, was found at Monte Creto, in Liguria. It is an *Oxyrhina* related to *O. hastalis* of Agassiz. Issel has imitated the epigenesis by leaving a fossil tooth of *Oxyrhina* for some time in a solution of sulphate of copper, when the salt was reduced, and the metal took the place of the substance of the tooth. The Pliocene beds of Vado, in the Savonese, yield examples of *Inula viscosa* transformed into hydrous peroxide of iron. F. W. R.

Jannettaz, E. Note sur la propagation de la Chaleur dans les espèces minérales à texture fibreuse. [Conductivity of Fibrous Minerals.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 203–205.

——. Gibbsite et Beauxite de la Guyane française. [Gibbsite and Beauxite from French Guyana.] *Bull. Soc. Min. France*, no. 4, pp. 70, 71.

Analyses given of specimens sent to the Paris Exhibition of 1878.

Jeremejew, P. v. Ueber einige neue Krystallformen des Ilmenorutils. [New Forms of Ilmenorutile.] *Bull. Ac. Imp. St. Pétersb.* t. xxiv. p. 534.

John, K. Chemische Untersuchungen einer Kohle und verschiedener silberhaltiger Bleiglanze aus Persien. [Chemical Researches on a Coal and various Argentiferous Galenas from Persia.] *Verh. k.-k. geol. Reichs.* pp. 121, 122.

The coal, from Hif, between Kaswin and Teheran, is fine and bituminous, and yields good coke. The lead-ores are from Schahabdulasim

(·075 p. c. silver), Kuhrud (·055 p. c. silver), Jurtitaba (·101 p. c. silver), and a nameless vein (·135 p. c. silver). The first three are associated with quartz, the last with calcite and quartz. G. A. L.

John, K. Halloysit von Tüffer. [Halloysite of Tüffer.] *Verh. k.-k. geol. Reichs.* pp. 386, 387.

Gives analyses of 3 varieties—semi-transparent, white compact, and white earthy.

Kenngott, A. [Nontronite and Polydymite.] *N. Jahrb.* Heft ii. pp. 180–185.

Objects to the name chloropal being applied to a mineral from Mugrau in Bohemia, and refers it to Nontronite. Discusses the composition of polydymite and other related minerals. F. W. R.

——. Ueber die Grundgestalten der Krystalspecies. [The Fundamental Forms of Crystal Species.] *N. Jahrb.* Heft iv. pp. 337–349.

A purely crystallographic paper.

Klement, Constantin. Chlorit aus dem Zillerthale. [Chlorite from the Zillerthal.] *Min. petr. Mitth.* Bd. i. pp. 365, 366.

——. Labradorit aus Labrador. *Min. petr. Mitth.* Bd. i. p. 366. Gives analyses.

Klien, Dr. Paul. [Adamite and Chrome-garnet.] *N. Jahrb.* Heft i. pp. 53, 54.

Announces the occurrence of Adamite on Smithsonite from the Laurium Mountains, and of chrome-garnet on prehnite from Jordansmühl, in Silesia. F. W. R.

——. Ueber Diaspor von Jordansmühl. *Jahres-Ber. Schles. Ges. Kultur.*

——. Ueber Manganosit von Langban in Schweden. *Ibid.*

——. Chromgranat in Schlesien. [Chrome-garnet in Silesia.] *Ibid.*

——. Ueber Fluorit von Evigtok in Grönland. *Ibid.*

——. Ueber den Catlinite. *Ibid.*

Kobell, Prof. F. von. Ueber das Vorkommen von Lithion und Thallium in den Zinkerzen von Raibl, in Kärnthen. [Lithium and Thallium in Zinc-ores of Raibl, Carinthia.] *Abh. k. bay. Ak. Wiss.* Bd. xiii. p. 552.

Records of discovery, by spectrum-analysis.

——. Tafeln zur Bestimmung der Mineralien mittelst einfacher chemische Versuche auf trockenem und nassem Wege. [Tables for Determination of Minerals by dry and wet Processes.] 11th edition. Pp. xxiv, 110. 8vo. *Munich.*

Koch, Dr. A. Neue Minerale aus dem Andesit des Aranyer Berges, in Siebenbürgen. [New Minerals from the Andesite of Mt. Arany in Transylvania.] *Min. petr. Mitth.* Bd. i. pp. 331–361, woodcuts. The Hungarian version has been noticed above, p. 216.

——. A Köszikläk Virágairol. [Natron Efflorescence.] *Ertesitö Kolozsv. Orv. Termész. Tudom. Tars.* köt. ii. pp. 11–17.

König, G. A. Leidyit, ein neues Silicat der Zeolithgruppe, und die vergesellschafteten Mineralien. [Leidyite, a new Silicate of the Zeolite Group, and associated Minerals.] *Zeitschr. Kryst. Min.* Bd. ii. Heft iii. pp. 300–303.

Leidyite is found in Leiperville Quarry, Crum Creek, Delaware Co., U. S., with grossular zoisite and heulandite. It is crystalline, and has the formula $\overset{II}{R}_2Al_2Si_8O_{15}+5H_2O$, where $\overset{II}{R}_2=\frac{7}{10}Fe+\frac{3}{10}Ca+\frac{5}{10}Mg+\frac{5}{10}H_2$.
T. W. D.

Kokscharow, N. von. [Crystallization of Perowskite.] *N. Jahrb.* Heft i. pp. 38, 39; 2 woodcuts.

Perowskite was regarded as monometric until Des Cloizeaux showed that it has two strongly divergent optic axes. To reconcile the optic and crystallographic properties, Kokscharow assumes that the mineral belongs to the rhombic system, and presents limiting forms with angles nearly those of regular crystals. 4 faces of the rhombic dodecahedron therefore become faces of the principal prism; 4 others form a brachydoma; and the remaining 4 are a macrodoma. The octahedral faces are referred to rhombic pyramids, and the cubic faces to pinacoids.
F. W. R.

—— Materialien zur Mineralogie Russlands. Bd. vii. Sheets 12–18, 20–24, Bd. viii. Sheets 1 & 2. 8vo. *St. Petersburg.*

Koninck, [Dr.] Lucien de. [Specimens of a Fibrous Mineral.] *Ann. Soc. Géol. Belg.* t. v. pp. lxxxii, lxxxiii.

Occurs in quartz at Ottré and Salm-Château; resembles asbestos, but seems to be new.

——. [Crystals of Apatite from Vieilsalm and crystallized Sulphur and Realgar from the Solfatara of Puzzuoli.] *Ann. Soc. Géol. Belg.* t. v. p. cxix.

Note of occurrence. **MM. Hock** and **Dewalque** note like occurrences.

——. Recherches sur les minéraux belges.—(Septième Notice.) Sur *l'Octaédrite* de Nil-Saint-Vincent. [Belgian Minerals. 7. *Octahedrite* of Nil-Saint-Vincent.] *Bull. R. Ac. Belg.* sér. 2, t. xlvi, pp. 245, 246.

Note of occurrence.

Lang, O. [Garnet.] *N. Jahrb.* Heft iv. pp. 374, 375.

Describes a columnar form of garnet from a boulder of gneiss found at Wellen, near Bremen.

Lasaulx, A. von. Ueber den Breislakit. [Breislakite.] *N. Jahrb.* Heft iv. pp. 380–383; 3 figs.

Crystallographic and optical studies of Breislakite from the lava of Capo di Bove and of Vesuvius, as well as from the trachyte of the Solfatara, prove that it is a capillary form of hornblende. Blowpipe reactions show the presence of iron and manganese. Breislakite therefore stands near to the Richterite from Pajsberg. F. W. R.

——. Das optische Verhalten des Pikranalcim vom Monte Catini in Toscana. [Optical Behaviour of the Picranalcime of Monte Catini, Tuscany.] *N. Jahrb.* Heft v. pp. 510–515, with figure.

A section shows the grouping of 8 asymmetrical or monosymmetrical individuals. The composition resembles that of harmotome or phillipsite. F. W. R.

——. Arbeiten aus den mineralogischen Institut der Universität Breslau. *N. Jahrb.* Heft vi. pp. 619–635.

1. *Iodobromite* a new silver-haloid. This new species occurs in small yellow crystals, mostly regular octahedra, associated with quartz and beudantite, at the mine Schöne Aussicht, near Dernbach, in Nassau. It is an iodide, bromide, and chloride of silver, corresponding to the formula $2Ag(Cl, Br) + AgI$. Sp. gr. = 5·713.

2. On *Saccharite.* Microscopic examination of saccharite from various localities near Frankenstein, in Silesia, shows that it is not a definite mineral species, but a variable aggregate of plagioclase, orthoclase, quartz, diopside, garnet, talc, &c. Some varieties consist almost wholly of plagioclase, with a small quantity of orthoclase.

3. On a Growth of two Micas from Middleton, Connecticut (2 woodcuts). One of the micas is at rue Muscovite; the other is meroxene. The specimens therefore exhibit a twin growth of two optically distinct species. F. W. R.

——. Ueber das optische Verhalten und die Krystallform des Tridymites. [Optical Properties and Crystallographical Form of Tridymite.] *Zeitsch. Kryst. Min.* Bd. ii. Heft iii. pp. 253–274, plate, 15 figs.

Tridymite is shown to crystallize in the triclinic system.

——. Ueber den Desmin. [Desmine.] *Zeitsch. Kryst. Min.* Bd. ii. Heft vi. pp. 576–587, plate.

A purely crystallological discussion. Specimens from various localities prove that harmotome, Phillipsite, and desmine form one well-characterized group. T. W. D.

——. Das Krystallsystem des Tridymit. *Jahres-Ber. Schles. Ges. Cultur.*

Laspeyres, H. Mineralogischen Bemerkungen. [Mineralogical Observations.—Part IV.] *Zeitsch. Kryst. Min.* Bd. ii. Heft ii. pp. 148–152; 2 figs.

9. Adamine crystals from Laurium. These crystals, found in druses in cellular calamine, are referable to two types in respect of crystallographical form and proportion of contained copper. T. W. D.

Lassen, T. Tabel over Aldersfölgen i 145 Haandstycker med Krystalliserede Mineraler fra Arendals Jernleiesteder. [List showing the Relative Age of the Minerals in 145 Rock-specimens from the Iron-ore Mines at Arendal, Norway.] *Nyt Mag. Nat.* Bd. xxiv. Heft 3, pp. 227, 228.

Lecoq de Boisbaudran, —. Sur un nouveau minéral découvert par M. Lettsom. *Compt. Rend.* t. lxxxvi. pp. 1028, 1029.

A mineral obtained from Cornwall many years ago, and regarded as blende, is found to be a phosphate of didymium, erbium, &c. It is to be called *Rhabdophane.* F. W. R.

Lenz, Dr. O. Chemische Analyse eines Laterit-Eisensteins aus Westafrika. [Analysis of a Laterite-ironstone from W. Africa.] *Verh. k.-k. geol. Reichs.* pp. 351–353.

Full analysis of a concretionary mass, of which there are large numbers in the sandy loam forming the banks of the Gaboon estuary. The percentage of iron oxide is 58·02. G. A. L.

Lewis, W. J. Crystallographic Notes. *Phil. Mag.* vol. v. pp. 139–144.

The mineralogical part relates to the measurement of small crystals of *Jordanite* and *Binnite* on a specimen of zinc-blende in the British Museum, from the Binnenthal. In Jordanite the following forms are considered to be new:—{225}, {025}, {023}, {312}, {310}. In Binnite the form $\kappa\{711\}$ is new. F. W. R.

Leymerie, Prof. A. Eléments de Minéralogie et de Lithologie. [Mineralogy and Lithology.] Ed. 3. Pp. x, 283. 8vo. *Paris.*

Leypold, F. Mineralogische Tafeln: Anleitung zur Bestimmung der Mineralien. [Mineralogical Tables for Determination of Minerals.] 8vo. *Stuttgart.*

Linares, [Prof.] A. G. de. De algunas publicaciones recientes sobre cristalografia y mineralogia. [Recent Crystallographical and Mineralogical Works.] *Bol. Inst. Libr. Enseñ. Madrid,* año ii. pp. 25–60.

Liversidge, Prof. A. Notes on some of the New-Zealand Minerals belonging to the Otago Museum, Dunedin. *Trans. N. Z. Inst.* vol. x. pp. 490–505.

The minerals noticed are graphite, retinite, bitumen, sulphur, calcite, aragonite, gypsum, vivianite, quartz, chalcedony, agate, flint, chert, carnelian, jasper, opal, hyalite, sinter, hornblende, diallage, hypersthene, olivine, steatite, serpentine, chloropal, muscovite, orthoclase, albite, garnet, halloysite, natrolite, platinum, auriferous quartz, mercury, cinnabar, cuprite, bornite, chrysocolla, chalcopyrite, mispickel, antimonite, wad, rhodonite, scheelite, galena, magnetite, hematite, limonite, siderite, chromite, pyrites, silver, and taranakite. F. W. R.

Liversidge, Prof. A. [Siliceous Sinter.] *Chem. News*, vol. xxxvii. p. 28.

Describes specimens of siliceous sinter from Ohaiawai (W. coast of New Zealand), and of cinnabar from the mercurial springs in the neighbourhood. Explains the blue colour of water in basins at Rotomahana as due to reflexion from minute particles of silica suspended in the water, and the colour of the pink terrace of sinter as due to admixture of red clay. F. W. R.

Lodge, Dr. O. J. On a Method of Measuring the Absolute Thermal Conductivity of Crystals and other rare Substances. *Proc. Phys. Soc.* vol. ii. pt. iv. pp. 201–209.

Lüdecke, Dr. O. Krystallographische Beobachtungen. [Crystallographical Notes.] *Zeitschr. ges. Nat.* Folg. 3, Bd. iii. pp. 78–109, pl. vi.

Apophyllite from Radau Valley (pp. 98–109), crystallography, and analyses.

——. [Anatase.] *Zeitschr. ges. Nat.* Folg. 3, Bd. iii. pp. 394, 395.

Mallard, E. Sur la Bravaisite, substance minérale nouvelle. [Bravaisite, a new Mineral.] *Bull. Soc. Min. France*, no. 1, pp. 5–8.

A finely laminated greenish-grey substance occurring with the coals and bituminous schists of Nayant (Allier). Its analysis leads to the formula $4{\cdot}5\ SiO_2 . Al_2O_3 . RO + 4$ aq. F. W. R.

Mallet, Dr. J. W. On the Chemical Composition of Guanajuatite or Selenide of Bismuth from Guanajuato, Mexico. *Amer. Journ.* ser. 3, vol. xv. pp. 294–296.

Analysis resulting in the formula Bi_2Se_3, with isomorphous replacements of Se by S.

——. On Bárcenite, a new Antimonate from Huitzuco, Mexico. *Amer. Journ.* ser. 3, vol. xvi. pp. 306–309.

Dark grey, opaque, brittle. H=55, sp. gr. 5·343. Analysis, by **J. R. Santos**, gives it as a mixture of mercuric sulphide, antimonic acid, and antimonate of Ca, Hg, and triad Sb. W. H. D.

——. La Barcenita: Documentos relativos al descubrimento de esta nueva especie mineral dedicada al Sr. D. Mariano Barcena de Mexico. Pp. 16. 8vo. *Mexico*. [See previous entry.]

Manby, C. E. Vermicellite. *Trans. Barrow Nat. Club*, vol. ii. p. 101. from boulders, Furness

Martin, K. Notizen über Diamanten. [Diamonds.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 521–526, plate.

A crystallographic study of the diamonds in the Leyden Museum.

Mayençon, —. Sur quelques produits volatils des mines de houille incendiées. [Volatile Products of Burning Coal-mines.] *Compt. Rend.* t. lxxxvi. pp. 491–493.

Meunier, Dr. Stan. Production artificielle de la brochantite. [Artificial Production of Brochantite.] *Compt. Rend.* t. lxxxvi. pp. 686, 687.

The brochantite was produced as an emerald-green substance found coating cleavage-fragments of galena placed in a solution of sulphate of copper of medium strength, and left for 11 months. G. A. L.

——. Cristallisation artificielle de l'orthose. [Artificial Orthoclase.] *Compt. Rend.* t. lxxxvii. p. 737.

Michel-Lévy, A. Note sur quelques minéraux contenus dans les sables du Mesvrin près Autun. [Minerals in the Sands of Mesvrin, near Autun.] *Bull. Soc. Min. France*, no. 3, pp. 39–41.

The minerals are magnetite, zircon, olivine, garnet, sphene, chromite, tourmaline, and sapphire.

——. Note sur l'association pegmatoïde de l'amphibole et du feldspath dans les amphibolites de Marmagne près Autun. [Pegmatoid Association of Amphibole and Felspar in the Amphibolites of Marmagne.] *Bull. Soc. Min. France*, no. 3, pp. 41, 42.

——. Sur la présence du zircon dans les gneiss au nord-est du Morvan. [Zircon in the Gneiss of the N.E. of Morvan.] *Bull. Soc. Min. France*, no. 5, pp. 77, 78.

Microscopic examination of the gneiss has revealed the presence of a single crystal of zircon.

——. Note sur le gisement de l'amphibolite à wernérite granulitique d'Odegaard près Bamle. [Title only entered above, p. 93.] *Bull. Soc. Min. France*, no. 5, pp. 79–81.

Describes the microscopic characteristics of Wernerite, and identifies a white mineral in the Odegaard rock which had been mistaken for labradorite as this species. F. W. R.

Moss, R. J. On Quartz with a Pearly Lustre. *Proc. R. Dublin Soc.* n. s. vol. i. p. 49.

Moutier, T. Sur la dilatation des cristaux. [Expansion of Crystals.] *Bull. Soc. Philomath. Paris*, sér. 7, t. ii. no. 2, pp. 78, 79.

Nordenskiöld, A. E. Mineralogiska bidrag. [Mineralogical Notes.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 28–32.

V. *Cleveite,* a new yttro-uranic mineral from Garta felspar-quarry, near Arendal, Norway. Analysis, by **G. Lindström**, of this new mineral leads to the formula (UO, PbO) [U_2O_3, Fe_2O_3, V_2O_3, Er_2O_3, Ce_2O_3, ThO_2]+H_2O. The accompanying minerals are orthite, Fergusonite, Thorite, Xenotime?, &c. VI. Three remarkable aerolites, &c. E. E.

——. Sur une nouvelle espèce minérale nommée Thaumasite. [New Mineral, Thaumasite.] *Compt. Rend.* t. lxxxvii. pp. 313, 314.

Lindström's analysis of this new Swedish mineral leads to the formula $CaO . SiO_2 + CaO . SO_3 + CaO . CO_2 + 14HO$.

Nordenström, G. Mineralogiska notiser. [Mineralogical Notes.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 209, 210.

1. Petroleum found in the copper-ore mine at Falun, Sweden. 2. A vanadium mineral for the first time found in Sweden. 3. Black calcspar (with 6·36 p. c. pyrolusite). E. E.

Olszewski, Dr. Stanislaw. Spis mineralów znanych z W. Ksiestwa krakowskiego. [List of Minerals of E. Krakow.] *Sprawozd. Kom. Fiz. Krakow,* t. 12, pp. 286–288.

22 species recorded, with analysis of Halloysite by **Websky.**

Pisani, F. Sur la mesure des angles des cristaux donnant des images multiples ou très vagues. [Measurement of Angles of Crystals giving multiple or very vague Images.] *Bull. Soc. Min. France,* no. 3, pp. 37, 38.

——. Sur divers minéraux, lettsomite, hypersthène et labradorite de l'hypérite de l'Aveyron. [Minerals of the Aveyron Hyperite.] *Compt. Rend.* t. lxxxvi. pp. 1418–1420.

Pohl, Dr. J. J. Eine einfache und sichere Unterscheidungsweise der echten Türkis von deren Nachahmungen. [Method of distinguishing true Turquoise from its Counterfeits.] *N. Jahrb.* Heft iv. pp. 364–369.

True turquoise when heated to redness decrepitates, becomes brownish-black, and generally falls to powder. All the imitations melt or frit, emit no sound, and exhibit after heating blue, green, or brownish colours. F. W. R.

Pond, J. A. On the Presence of Nickel in the Auckland District. *Trans. N. Zealand Inst.* vol. x. pp. 454–456.

Notes 7 localities producing nickel-bearing rocks, chiefly serpentine; once in calcite, and again in green unctuous clay. Cobalt occurs at four localities in the same district, in the form of *Asbolite.* R. E.

Portes, L. Manuel de Minéralogie. [Manual of Mineralogy.] 12mo. *Paris.*

Quenstedt, F. H. Handbuch der Mineralogie. [Handbook of Mineralogy.] Ed. 3. Pp. 997. 8vo. *Tübingen.* Price 18*s.*

Raffelt, R. Geologische Notizen aus Böhmen.—I. Aluminit von Mühlhausen bei Kralup. [Geological Notes from Bohemia.—I. Aluminite of Mühlhausen, near Kralup.] *Verh. k.-k. geol. Reichs.* p. 360.

Gives analysis yielding the formula $Al_2O_3SO_3+9H_2O$.

Raimondi, A. Minéraux du Pérou. Catalogue raisonné d'une collection des principaux types minéraux de la République, comprenant aussi des échantillons de guano et des débris fossilisés des oiseaux qui l'ont produit. Traduit par **J. B. H. Martinet.** Pp. 336. 8vo. *Paris.*

Rammelsberg, [Prof.]. Ueber die Zusammensetzung des Petalits und Pollucits von Elba. [Composition of Petalite and Polluxite from Elba.] *Monatsb. k. preuss. Ak. Wiss.* pp. 9–14.

Original analyses of these species.

——. Ueber die Zusammensetzung der Lithionglimmer. [Composition of Lithia Mica.] *Monatsb. k. preuss. Ak. Wiss.* pp. 616–631.

Analyses of lepidolite from Rozena, Paris (Maine), Juschakowa (Ural), and Zinnwald. The lithia-micas are compounds of normal and semi-silicates (bi- and uni-silicates) in different proportions, 2 : 1 in the first three micas, and 3 : 1 in the last. F. W. R.

Rath, G. vom. Mineralogische Mittheilungen. (Neue Folge.) [Mineralogical Communications.] *Zeitschr. Kryst. Min.* Bd. ii. Heft ii. pp. 169–189, pl. of 15 figs., and Bd. iii. Heft i. pp. 1–16, pl. of 15 figs.

7. Crystallographical observations on copper from Lake Superior. A secondary growth of crystals is described—a phenomenon hitherto unobserved in native metals, although well known in other minerals. 8. Unusual and anomalous faces in garnet from Pfitschthal, in Tyrol. 9. On a remarkable pseudomorphous calcspar macle from Brazil.

10. Addition to our knowledge of the Crystallography of Cyanite. 11. On a stellate tabular twin-crystal of native silver. This crystal resembles those of gold from Vöröspatak (see Bd. i. Heft i.), but is characterized by exhibiting only faces of the icositetrahedron, with a single octahedral face as twin plane. T. W. D.

——. Ueber ungewöhnliche und anomale Flächen des Granats aus dem Pfitscher Thale. [Unusual and anomalous Faces of Garnet from the Pfitsch Valley.] *Monatsb. k. preuss. Ak. Wiss.* pp. 122–130, pl. [See also above.]

Rath, G. vom. [Crystallography of Cyanite.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxv. *Sitz.*

——. Sur la cristallisation du disthène. [Crystallization of Disthene.] *Bull. Soc. Min. France*, no. 4, pp. 62–67, pl.

Disthene is remarkable as a triclinic mineral with an angle of 90°. The only other species presenting the same characteristic is andesine.

Rauff, Hermann. Ueber die chemische Zusammensetzung des Nephelins, Cancrinits und Mikrosommits. [Chemical Constitution of Nepheline, Cancrinite, and Microsommite.] *Zeitschr. Kryst. Min.* Bd. ii. Hefte iv., v. pp. 344–479, and pp. 58. 8vo. *Bonn.*

Gives analyses of Vesuvian minerals, arranging the members of the Nepheline group thus:—

Tetragonal.	Hexagonal.	Regular.
Leucite. $\overset{\mathrm{I}}{R}_2Al_2Si_4O_{12}$	Nepheline (Elaolite). $\left\{\begin{matrix}\overset{\mathrm{I}}{R}_2Al_2Si_4O_{12}\\ 7(\overset{\mathrm{I}}{R}_2Al_2Si_2O_8)\end{matrix}\right\}$	Sodalite. $\left\{\begin{matrix}2NaCl\\ 3Na_2Al_2Si_2O_8\end{matrix}\right\}$
	Mikrosommite. $\left\{\begin{matrix}2(CaSO_4+3CaAl_2Si_2O_8)\\ 4NaCl+3Na_2Al_2Si_2O_8\\ 4NaCl+3Ka_2Al_2Si_2O_8\end{matrix}\right\}$	Hauyne and Nosean. $\left\{\begin{matrix}l(CaSO_4+2CaAl_2Si_2O_8)\\ m(Na_2SO_4+2Na_2Al_2Si_2O_8\\ n(NaCl+2Na_2Al_2Si_2O_8\end{matrix}\right\}$
	Cancrinite (Davyne). $\left\{\begin{matrix}\overset{\mathrm{I}}{R}_2Al_2Si_4O_{12}\\ 7(\overset{\mathrm{I}}{R}_2Al_2Si_2O_8)\end{matrix}\right\}+4CaCO_3+6H_2O.$	

The apparent isomorphism of Nepheline and Microsommite is remarkable and perplexing; the silicate $\overset{\mathrm{I}}{R}_2Al_2Si_2O_8$ is common to both; but the constitutions of the minerals are so different as to offer no ground for isomorphism. Sodalite and Hauyne show like crystallographical relations; but here again $\overset{\mathrm{I}}{R}_2Al_2Si_2O_8$ is common, although the constitutions of the minerals are very different. T. W. D.

Rœpper, Prof. W. T. On a Pseudomorph after Anorthite from Franklin, New Jersey. *Amer. Journ.* ser. 3, vol. xvi. pp. 364, 365.

The anorthite has suffered internal molecular rearrangement, with introduction of potash and water, whereby its sp. gr. has been raised to 3·1. The surface is coated with minute crystals. F. W. R.

Rosing, B. Ueber das Clausthaler Zundererz. [The Clausthal "Tinder-ore."] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 527–529.

An analysis leads to the formula $Pb_4Sb_6S_{17}$. It is suggested that the tinder-ore represents the last remains of a mineral, probably an antimonial galena, which originally filled the cavities in which the capillary ore is now found. F. W. R.

Ross, Lieut.-Col. W. A. On the Pyrological Examination of Zeolitic Silicates. *Chem. News*, vol. xxxviii. pp. 206, 207, 236.

Roth, L. Ueber den Magnetkies von Auerbach. [Magnetic Pyrites, Auerbach.] 17 *Ber. Oberhess. Ges.* pp. 45–47.

Crystallographic description.

——. Ueber ein neues Vorkommen von Gismondin. [New Occurrence of Gismondine.] 17 *Ber. Oberhess. Ges.* pp. 47, 48.

Description of crystals from the E. flank of the Vogelsberg Mts.

Rouville, P. de. Sur deux échantillons de cristaux naturels de sulfate de magnésie de dimensions remarquables. [Two large Crystals of Sulphate of Magnesia.] *Compt. Rend.* t. lxxxvii. p. 703.

Russell, I. C. On the Occurrence of a Solid Hydrocarbon in the Eruptive Rocks of New Jersey. *Amer. Journ.* ser. 3, vol. xvi. pp. 112–114.

Describes a mineral occupying cavities in Triassic amygdaloid. Refers it to alteration of petroleum, such as in other places has filled fissures with allied minerals. W. H. D.

Sadebeck, A. [Titanic Iron-ore.] *N. Jahrb.* Heft iii. pp. 287–289.

Denies that a crystal of titanic iron-ore from the Binnenthal, described as tetartohedral, exhibits tetartohedrism.

——. Ueber den Namen "Markasit." [On the Name "Marcasite."] *N. Jahrb.* pp. 289–291.

Philological note on this Arabic name.

——. Ueber die Krystallisation des Markasits und seine regelmässigen Verwachsungen mit Eisenkies. [Marcasite and its regular Growth with Iron-pyrites.] *Ann. Phys. Chem. Erganzbd.* Bd. viii. pp. 625–664, 2 plates; and *Monatsb. k. preuss. Ak. Wiss.* pp. 15–23.

——. Zwei neue regelmässige Verwachsungen verschiedener Mineralien. *Ann. Phys. Chem.* n. f. Bd. v. pp. 576–580, woodcuts.

Growth of arsenical pyrites with iron pyrites, and copper pyrites with fahlerz.

——. Ueber geneigtflachige Hemiedrie. [On Inclined-faced Hemihedrism.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 567–614, plate.

Sadebeck, A. Ueber die Krystallotektonik des Silbers. [Crystallization of Silver.] *Min. Petr. Mitth.* Bd. i. pp. 293–317; 2 pls.

These two papers are purely crystallographic.

Sandberger, Prof. F. [Antimony Minerals.] *N. Jahrb.* Heft i. pp. 46, 47.

Notes on an examination of the antimony-ore veins in phyllite at the Brandholz, near Goldkronach. Plagionite and Meneghinite are announced as new for this locality. Tridymite occurs at the Friedrich-Christian mine in Shapbach, and Braunite and Lithiophorite have been found in the Black Forest. The occurrence of heavy and noble metals in olivine, augite, hornblende, and mica is important genetically. F. W. R.

——. [Composition of Augites, Hornblendes, and Micas.] *N. Jahrb.* Heft iii. pp. 291, 292.

Records the occurrence of several of the heavy metals (Cu, Co, Sb) in these minerals.

——. [Apatite of Aschaffenburg, &c.] *N. Jahrb.* pp. 842, 843.

Note on the potash-mica in Eclogite, and on the beryl and apatite of Aschaffenburg. Apatite is found microscopically enclosed in tourmaline, whence, perhaps, the origin of the phosphoric acid in some analyses of tourmaline. F. W. R.

——. [Notes on Metals occurring in Rocks.] *Sitz. k.-bay. Ak. Wiss.* Bd. iv. p. 136.

Records the presence of copper, lead, cobalt, nickel, bismuth, silver, antimony, arsenic, and tin in the olivine, hornblende, augite, and micas of crystalline rocks of various ages. G. A. L.

Santos, J. R. Examination of the Products of Weathering of Allanite. *Chem. News*, vol. xxxviii. p. 95.

Analyses of the two layers of the crust on the Allanite of Amherst Co., Virginia. From these it appears that Ca, Mg, Y, and Di have been entirely removed; La has almost disappeared; Ce has been reduced in quantity; much SiO_2 has been withdrawn; Fe has been peroxidized; H_2O has increased; and Al and G have not been removed. F. W. R.

Scacchi, A. Dell' Anglesite rinvenuta sulla lave Vesuviane. [Anglesite in Vesuvian Lava.] 4to. *Naples.*

Scharff, Dr. Friedrich. [Fluorite in the Taunus.] *N. Jahrb.* Heft i. pp. 55, 56.

Announces the discovery of violet fluor-spar at Rossert.

——. Topas und Quarz. *N. Jahrb.* Heft ii. pp. 168–173, woodcuts.

A comparison of certain peculiarities of growth in crystals of the two species.

Scharff, Dr. Friedrich. Treppen und Skelettbildung einiger regulärer Krystalle. *Abh. Senckenb. nat. Ges.* Bd. xi. p. 36; 3 pls.

Schmidt, Sandor. [Barytes from Mursag Beregh County.] *Földt. Közl.*

Schrauf, A. Ueber die Tellurerze Siebenbürgens. [Tellurium-ores of Transylvania.] *Zeitsch. Kryst. Min.* Bd. ii. Heft iii. pp. 209–252; 2 pls., 34 figs.

Sylvanite, Krennerite, Nagyagite, Hessite, Stützite (all Transylvanian ores), are described. Stützite is the name proposed for a silver-tellurium-sulphide first described by Stütz. T. W. D.

——. Ueber Brookite. *N. Jahrb.* Heft i. pp. 50–52.

Reply to Kokscharow's criticism, and vindication of views as to the existence of 3 types of crystal in this species.

Schrockinger, Baron von. Dietrichit, ein neuer Alaun aus Ungarn. [Dietrichite, a new Alum from Hungary.] *Verh. k.-k. geol. Reichs.* pp. 189–191.

The mineral has been formed within the last 14 years at Felsöbanya. Its formula is $ZnSO_4+Al_2 3SO_4+23H_2O$. It approaches nearest to the Alphonite of Glock. G. A. L.

——. Zwei neue Harze aus Mähren. [Two new Resins from Moravia.] *Verh. k.-k. geol. Reichs.* pp. 387–390.

One of the resins, having a composition represented by the formula $C_{20}H_{28}O_2$, is called *Muckite*; the other, represented by $C_{18}H_{28}O_2$, is named *Neudorfite* (in text spelt *Neudrofit*). F. W. R.

Schumacher, Eugen. Arbeiten aus dem mineralogischen Institut der Universität Breslau. *N. Jahrb.* Heft viii. pp. 814–825, 2 woodcuts.

6. Granular Plagioclase in the Geppersdorf Limestone in Silesia. The felspar is mostly white and saccharoidal. Its analysis shows it to be an andesine or a labradorite.

7. Vesuvian in the Limestone of Deutsch-Tschammendorf, near Strehlen. The Vesuvian occurs in granular or columnar crystalline forms. Gives analysis. Part of the silica appears to be replaced by titanic acid.

8. Phenomena of growth in quartz from the so-called Crystal Mine of Krummendorf. The terminations of many of the crystals are stepped, like Babel quartz. F. W. R.

Schuster, Max. Optisches Verhalten des Tridymits aus den Euganeen. [Optical Characters of Tridymite from the Euganeans.] *Min. petr. Mitth.* Bd. i. pp. 71–77, plate and woodcuts.

——. Labradorit von Kamenoi Brod (Podolien). [Labradorite, Podolia.] *Min. petr. Mitth.* Bd. i. p. 367.

Schuster, Max. Halbopal, Klause bei Gleichenberg. [Semiopal, Gleichenberg.] *Min. petr. Mitth.* Bd. i. pp. 371, 372.
Analyses given.

Seligman, G. Om apophylliten från Utö. [Apophyllite from Utö, Sweden.] *Geol. Fören. Stockholm Förh.* Bd. iv. p. 112.
Short notes as to the crystallographic system.

Semmons, William. Notes on Chrysocolla. *Proc. Liverpool Geol. Soc.* vol. iii. pt. iv. pp. 342–349.
Describes 11 specimens of copper-ores from California, Utah, Peru, Chili, and Cornwall. Gives 2 analyses (California) by **W. M. Hutchings.** Chrysocolla is a hydrated silicate of variable composition and character, with no fixed formula. Every gradation can be traced to chalcedony and to kaolin. W. W.

Shepard, C. U., Jun. On a new Mineral, Pyrophosphorite, an Anhydrous Pyrophosphite of Lime from the West Indies. *Amer. Journ.* ser. 3, vol. xv. pp. 49–51.
Pyrophosphorite is essentially an anhydrous ortho-pyrophosphate of lime with pyrophosphate of magnesia. Sp. gr.=2·5 to 2·53; H=3 to 3·5. Generally snow-white and opaque. Exact locality not given.
W. H. D.

~~**Silvestri, Prof. O.** Sopra alcune paraffine ed altri carburi d'idrogeno omologhi che trovansi contenuti in una lava d'Etna. [Paraffin and other Hydrocarbons in Etna Lava.] *Atti Ac. Gioen. Sci. Nat.* ser. 3, t. xii.~~

Cancel see Errata p.xxx.

Sjögren, Hj. Om några bismutmineralier från Nordmarks grufvor i Vermland. [Bismuth Minerals from Nordmark Mines, in Vermland, Sweden.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 106–113.
1. Native bismuth; 2. Bjelkite; 3. *Galenobismuth* (new mineral). Analyses given.

——. Mineralogiska notiser. [Mineralogical Notes.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 156–163.
V. Manganese occurrence at Nordmark, Sweden. The following minerals are noticed and described:—Manganosite, Pyrochroite, Brucite, Hausmannite, Olivine, Rhodochrosite, Barytes, and Garnet. Analyses by **C. H. Lundström** of garnet and by **L. Stahre** of pyrochroite given.
E. E.

Skey, W. On the Result of an Examination of certain of our Manganese Ores for Cobalt. *Trans. N. Zealand Inst.* vol. x. pp. 448, 449.
Specimens of hydrous oxides of Manganese from Wellington, Nelson, Marlborough, and Auckland were not found to contain any trace of cobalt. R. E., Jun.

Smith, J. L. Tantalite from Coosa County, Alabama, its mode of occurrence and composition. *Amer. Journ.* ser. 3, vol. xv. pp. 203, 204.

Occurs loose, associated with detached weather-worn masses of granite; also, at the intersection of this line of granite-blocks, with "a ridge filled with quartz and flint rocks." Analysis given. F. W. R.

——. On the Composition of the new Meteoric Mineral *Daubréelite* and its frequent, if not universal, occurrence in Meteoric Irons. *Amer. Journ.* ser. 3, vol. xvi. pp. 270–272; and in French, *Compt. Rend.* t. lxxxvii. pp. 338–340, and *Bull. Soc. Min. France*, no. 7, pp. 112, 113.

Analyses show this mineral to be a sulphide of iron with sesquisulphide of chromium ($FeS+Cr_2S_3$), corresponding with chromite, the O being replaced by S. Its sp. gr. is 5·01. It has been obtained from the irons of Cohahuila, Toluca, Sevier, and Cranbourne. F. W. R.

——. Sur le fer natif du Groënland et le basalte qui le renferme. [Native Iron of Greenland and the Basalt which contains it.] *Compt. Rend.* t. lxxxvii. pp. 674–676; and, under slightly different title, *Bull. Soc. Min. France*, no. 5, pp. 90–92.

Thinks that the iron is of terrestrial origin, and probably a secondary product formed by the reducing action of the lignite and other organic matter which the basaltic dykes have penetrated. F. W. R.

Sohncke, S. Ueber den Einfluss der Temperatur auf das optische Drehungsvermögen des Quarzes und des chlorsauren Natrons. [Influence of Temperature on the Optical Rotatory Power of Quartz and Chlor~~ate~~ide of Sod~~a~~ium.] *Ann. Phys. Chem.* pp. 516–532.
Chloride of Sodium.

Sonstadt, E. On the Application of Sonstadt's Solution to the Separation of Minerals for Chemical Analysis. *Chem. News*, vol. xxxvii. pp. 120, 121.

Claims priority for suggesting this use of the liquid.

Sorby, H. C. On the Determination of the Minerals in Thin Sections of Rocks by means of their Indices of Refraction. *Min. Mag.* vol. ii. no. 8, pp. 1–4.

Describes his new method of determining the index of refraction of transparent minerals in (1) comparatively thick and (2) very thin sections. Gives examples of its value in identifying minerals in sections of rocks. F. W. R.

——. Further Improvements in Studying the Optical Characters of Minerals. *Min. Mag.* vol. ii. no. 10, pp. 103–105.

——. On a New Method for Studying the Optical Characters of Minerals. *Rep. Brit. Assoc.* for 1877, *Sections*, p. 77. See GEOLOGICAL RECORD for 1877, p. 253.

Sorby, H. C. President's Address. *Journ. R. Micr. Soc.* vol. i. pp. 1–18, pl. 1.

Contains an account of an adaptation of Dr. R. Pigott's *refractometer* to the microscope, for the examination of certain optical characters of minerals, and the application of this method to the study of thin sections of rocks. E. T. N.

Spiess, G. Zur Geschichte der Pseudomorphosen des Mineralreichs. [History of Pseudomorphs.] *Leopoldina*, Heft xiv. pp. 28, 40, 53.

Spottiswoode, William. Quartz: an Old Chapter re-written. *Proc. R. Inst.* vol. iii. pp. 561–563.

Describes, under a new experimental form, the effect of rock crystal upon polarized light.

Stead, J. E. Phosphorus in Cleveland Ironstone. *Chem. News*, vol. xxxviii. pp. 14–18, 27–31, 39–42.

Gives analyses of samples of Cleveland ironstone taken from every foot of the main ironstone bed; also of the associated fossil wood.

Streng, Dr. A. [Silver Pyrites of Andreasberg: Minerals of Chañarcillo.] *N. Jahrb.* pp. 637, 638.

Crystallography of silver-pyrites. List of minerals from Atacama.

——. Ueber den Silberkies von Andreasberg. [Silver-pyrites from Andreasberg.] *N. Jahrb.* Heft viii. pp. 785–799, plate.

A mineral, mistaken for magnetic pyrites, occurring on the pyrargyrite of Andreasberg, in the Hartz, is found to be *Silberkies.* Its crystalline forms, chemical composition, and analogies are discussed. The formula deduced is $AgFe_2S_3$. F. W. R.

——. Mineralogische Mittheilungen über die Erze von Chañarcillo in Nordchile. [Ores of Chañarcillo, N. Chili.] *N. Jahrb.* Heft ix. pp. 897–927, plate.

Crystallographic descriptions of Proustite, pyrargyrite, fire-blende, and magnetic pyrites.

——. Vorläufige Mittheilungen über den Quarz von der Grube Eleonore am Dünstberge bei Giessen. [Quartz of the Eleonora Mine, Giessen.] 17 *Ber. Oberhess. Ges.* pp. 36–42.

Mineralogical description. The mode of occurrence is quoted from **C. Trapp** (14 *Ber.* 1873).

Struver, J. Ueber polysynthetische Spinellzwillinge. [Polysynthetic Macles of Spinelle.] *Zeitschr. Kryst. Min.* Bd. ii. Heft iv., v. pp. 480–491, plate; and, in Italian, in *Atti R. Ac. Linc.* ser. 3, *Mem.* vol. ii. pp. 292–301, plate.

Crystallographic measurements.

Szabó, Dr. Joszef. Adatok a Moraviczai Asványok Jegyzékenek

Kiegészitéséhez. [Summary of Moravicza Minerals.] *Math. Természet. Közlem.* köt. xv. pp. 413–426.

Remarks, with analyses by **Dr. Kalman Hidegh,** on tremolite and serpentine; and general list, with localities. The crystallography of fassaite is noted. W. H. D.

Thoulet, J. Variations des angles plans des clivages sur les faces des principales zones dans le pyroxène, l'amphibole, l'orthose et les feldspaths tricliniques. [Variations of the Plane Angles of Cleavage on the Faces of the Principal Zones in Pyroxene, Amphibole, Orthoclase, and the Triclinic Felspars.] *Ann. Mines,* sér. 7, t. xiv. pp. 100–120; and *Bull. Soc. Min. France,* no. 2, pp. 21, 22.

——. Procédé pour mesurer les angles solides des cristaux microscopiques. [Process for measuring the Solid Angles of Microscopic Crystals.] *Bull. Soc. Min. France,* no. 4, pp. 68, 69.

Trippke, P. Arbeiten aus den mineralogischen Institut der Universität Breslau. *N. Jahrb.* Heft vii. pp. 673–698.

4. Enstatite from the Olivine of the Gröditzberg. Enstatite and diallage occur together, forming a regular lamellar growth, with parallel macropinacoids.

5. On the twin formation of the Phillipsite of Sirgwitz. Crystallographic description. Erratum at p. 830. F. W. R.

Tschermak, G. Die Glimmergruppe. [The Mica Group. Part I.] *Sitz. k. Ak. Wiss. Wien,* Bd. lxxvi. pp. 97–144; 4 pls.

Deals with meroxene (Vesuvius, Hungary, Siberia), anomite (L. Baikal), phlogopite (Austria, Finland, Ceylon, Canada, New York), zinnwaldite (Saxony, Siberia, Massachusetts), muscovite (Bavaria, Switzerland, Norway, Bengal, Styria), lepidolite (Elba, Connecticut, Maine), and margarite (Tyrol), giving crystallographic measurements, blowpipe characters, &c., and analyses of meroxene by **A. Zellner, J. Rumpf,** and **Dr. F. Berwerth.** See GEOLOGICAL RECORD for 1877, p. 255. W. H. D.

——. Optisches Verhalten von Korund-Krystallen. [Optical Character of Corundum Crystals.] *Min. petr. Mitth.* Bd. i. pp. 362–364.

Vélain, Ch. Étude microscopique des verres résultant de la fusion des cendres de graminées. Production artificielle de la tridymite, de l'anorthite, de la Wollastonite et de l'augite. [Microscopic Study of the Vitreous Masses resulting from the Fusion of the Ashes of the Grasses. Artificial Production of Tridymite, Anorthite, Wollastonite, and Augite.] *Bull. Soc. Min. France,* no. 7, pp. 113–124.

Vrba, C. Mineralogische Notizen. [Mineralogical Notes.] *Zeitschr. Kryst. Min.* Bd. ii. Heft ii. pp. 153–162; 6 figures.

1. Frieseite, a mineral allied to Sternbergite, found sparingly in

Joachimsthal, crystallizes in the rhombic system, and has a formula $\left\{\begin{array}{l} 3Ag_2S \\ 3Fe\ S \\ 10Fe\ S_2 \end{array}\right\}$. 2. Cerussite from Rodna, in Transylvania: unusual forms. 3. Analyses of Diaphorite from Pribram, and Freieslebenite from Hiendelaencina. T. W. D.

Wadsworth, M. E. Fusibility of the Amorphous Varieties of Quartz. *Proc. Boston Soc. Nat. Hist.* vol. xix. p. 238. Shews that Chalcedony, agate, opal, &c. ar

——. On the so-called Tremolite of Newbury, Mass. *Proc. Boston Soc. Nat. Hist.* vol. xix. pp. 251, 252. Shews this mineral to be Wollastonite.

Waller, J. Analys af Demantoid från Ural. [Analysis of Diamanthoid from the Ural.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 184–187.

3 analyses given. The mineral is a typical iron-lime garnet. The green colour probably depends on protoxide of iron.

Ward, J. C. Quartz as it occurs in the Lake District; its Structure and its History. *Trans. Cumb. Assoc.* pt. iii. pp. 77–90; and *Sci. Goss.* no. 166, pp. 217, 218; no. 167, pp. 241, 242; no. 168, pp. 265–267.

Considers the mineral,—first as vein-quartz, describing its mode of occurrence; secondly as a rock-constituent, describing its occurrence in the stratified and unstratified rocks of the Lake District. Treats of quartz as a microscopical study, discusses the conclusions which may be drawn regarding the origin of granite from the existence of liquid-filled cavities in the quartz grains, and seeks to ascertain the probable conditions of depth and pressure under which the granite was formed. A. J. J-B.

Websky, —. Ueber Krystall-Berechnung im triklinischen System. [Crystallographic Calculations in the Triclinic System.] 8vo. *Berlin.*

Weisbach, A. [Quartz and Calcite.] *N. Jahrb.* Heft i. pp. 54, 54, woodcut.

On a specimen showing regular growth of quartz and calcite from the Black Rock, near Cork.

——. [Kakochlor.] *N. Jahrb.* Heft viii. pp. 846–849.

Describes the Kakochlor of Rengersdorf, near Görlitz. It stands near to the lithia-bearing asbolane of Saalfeld and to the lithiophorite of Zwickau. Gives analyses by **Iwaya.** F. W. R.

——. Ueber Silberkies. [Silver Pyrites.] *Jahrb. Berg- Hütt. Sachs.* plate.

Chemical and crystallographical notes.

Weisbach, A. Tabellen zur Bestimmung der Mineralien nach äusseren Kennzeichen. [Tables for the Determination of Minerals.] Ed. 2. 8vo. *Leipzig.*

Wleugel, S. Om forekomsten af indium i norske mineraler. [Occurrence of Indium in Norwegian Minerals.] *Nyt Mag. Nat.* Bd. 24, H. 3, pp. 333–336.

Young, T. G. The Gas of the Grotta del Cane. *Journ. Chem. Soc.* vol. xxxiii. pp. 51, 52.

Analysis given. The gas is saturated with aqueous vapour, and contains from 61·5 to 71 p. c. of carbonic acid.

Zepharovich, V. v. [More accurate description of localities described in his communication, Bd. i. p. 371, *Zeitsch. Kryst. Min.*] *Zeitsch. Kryst. Min.* Bd. ii. Heft ii. pp. 195.

——. Krystallographische Wandtafeln für Vorträge über Mineralogie. II. Lief., pls. 21–70. [Crystallographic Diagrams for Mineralogical Lectures. Part ii.] *Prague.*

Zezi, P. Le nuove specie minerali studiate e descritte nel' anno 1877. [New Species of Minerals described in 1877.] *Boll. R. Com. geol. Ital.* vol. ix. pp. 196–225.

For original publications see the Geological Record for 1876 and 1877 and the present volume.

SUPPLEMENT FOR 1874–1877.

Barcena, M. Informe sobre los Minerales platiniféros de Jacala. [Platinum Minerals of Jacala.] *Naturaleza*, t. ii. p. 369. [1874.]

Barnes, Joseph, and **Harry Grimshaw**. On a Mineral Water from Humphery Head, near Grange-over-Sands, North Lancashire. *Proc. Lit. Phil. Soc. Manch.* vol. xvi. pp. 62–66. [1877.]

Describe the geology of Humphery Head (Carboniferous Limestone on Silurian). Give the analyses of the mineral water, and remarks thereon. T. W. N.

Baumgarten, G. Ueber die Elasticität von Kalkspathstäbchen. [Elasticity of Plates of Calcite.] *Ann. Phys. Chem.* Bd. clii. pp. 363–398; 2 pls. [1874.]

Bayer, C. Manganosiderit, ein neues Mineral. [Manganosiderite, n. sp.] *Verh. nat. Ver. Brünn*, Bd. xii. p. 20. [1874.]

Beltendorff, A. Ueber den Ardennit und über eine Methode zur Scheidung der Vanadinsäure von Thonerde und Eisenoxyd. [Ardennite: Mode of Separation of Vanadic Acid from Alumina and Oxide of Iron.] *Ann. Phys. Chem.* Bd. clx. pp. 126–131. [1877.]

Bertrand, E. Topaz von Framont. *Zeitschr. Kryst. Min.* Bd. i. p. 297. [1877.]

Crystallographic note.

Blake, Dr. James. On Roscoelite, or Vanadium Mica. *Proc. Calif. Ac. Sci.* vol. vi. pp. 150, 151. [1876.]

Analysis of Colomite by **Dr. Ghent** shows about 20 p. c. of vanadium. It is proposed to change the name to *Roscoelite.*

Braun, Max. [Italian Tinworks.] *N. Jahrb.* 1877, pp. 498, 499.

Notes on the ores and associated minerals.

——. [Mineralogical Notes.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiv. *Corr. Blatt*, pp. 111, 112. [1877.]

On minerals from Germany and Italy.

Bücking, H. Die optischen Eigenschaften des Astrophyllits. [Optics of Astrophyllite.] *Beiblätt. Ann. Phys. Chem.* 1877, pp. 686, 687.

Campomanes, —. Riquera mineral de los distritos de Azuaga, Fuente Ovejuna, Alanis y Guadalcanal. [Mineral Resources, Spain.] *Rev. Min.* ser. B, p. 197. [1876.]

Chancourtois, — de. Sur la question du Fer natif. [The Question of Native Iron.] *Bull. Soc. Géol. France*, ser. 3, t. v. pp. 110, 111. [1877.]

Refers to the discovery of a bed of native nickeliferous iron in Brazil, and to the Ovifak iron. See **Daubrée** (GEOLOGICAL RECORD for 1877, pp. 218, 221). W. H. D.

Coromilas, L. A. Ueber die Elasticitätsverhältnisse in Gyps und Glimmer. [Elasticity in Gypsum and Mica.] 3 pls. *Tübingen*, 1877.

Damour, A. Notice et Analyse sur la Vietinghofite. [Vietinghofite, n. sp. ?] *Bull. Ac. Imp. Sci. St. Pétersb.* t. xxiii. pp. 463–465. [1877.]

A variety of Samarskite from L. Baikal.

Desains, P. Ueber das Drehungsvermögen des Quarzes für die dunkeln Wärmestrahlen. [Rotation-power of Quartz on the Dark Heat-rays.] *Beiblätt. Ann. Phys. Chem.* Bd. i. pp. 392, 393. [1877.]

Des Cloiseaux, A. Manuel de Minéralogie. T. ii. fasc. 2. *Paris*, 1874. (Fasc. 1 noticed in the GEOLOGICAL RECORD for 1874, p. 229.)

——. [Optical Properties of Crystals and their Imperfections.] *N. Jahrb.* 1877, pp. 160, 161.

——. [Humite and Microcline.] *Ibid.* pp. 499–504.

Dewalque, F. Notice sur une Vivianite Blanche. [White Vivianite.] *Ann. Soc. Géol. Belg.* t. iii. pp. 3–6. [1876.]
Occurs in coast peat at Antwerp. Analysis given.

Engelhard, —. Die Bernstein. [Amber.] *Schrift. Ver. nat. Kenntn. Wien*, Bd. xv. p. 1. [1875.]

Engström, N. Undersökning af några Mineral, som innehålla sällsynta jordarter. [Some Minerals containing Rare Earths.] 8vo. *Upsal*, 1877.

Feistmantel, O. Mineralogischen Notizen aus Indien. [Mineralogical Notes from India.] *Sitz. k. böhm. Ges. Wiss.* 1875, p. 216.

Fischer, H. Ueber Nephrit, Jadeit und Chloromelan. [Nephrite, Jadeite, and Chloromelane.] *Verh. Berl. Ges. Anthrop.* March, 1875.

Frickhinger, Hermann. Dysodil im Ries. [Dysodile in the Ries.] *Verh. Würzb. phys.-med. Ges.* N. F. Bd. ix. [1875.]

Grattarola, G. Dell' unità cristallonomica in Mineralogia. [Unity of Nomenclature in Crystallography.] *Riv. Sci.-ind.* Nov. 1877.

Groth, P. Krystallographische Mittheilungen aus dem mineralogischen Institut zu Strasburg. [Crystallographic Notes from the Mineralogical Institute of Strasburg.] 8vo. *Leipzig*, 1874.

Gurlt, Dr. [Blende, Wipperfurth.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Sitz.* p. 304. [1875.]
Crystallographical note.

Hallock, E. J. Index to the Literature of Titanium. *Ann. N. York Acad. Sci.* vol. i. pp. 53–76. [1877.]
General Literature, 1791–1876. Minerals, 1783–1876.

Hankel, W. Ueber die thermoelektrischen Eigenschaften des Gypses, des Diopsids, des Orthoklases, des Albits und des Periklins. [Thermo-electric Properties of Selenite, Diopside, Orthoclase, Albite, and Pericline.] *Ann. Phys. Chem.* n. F. Bd. i. pp. 276–285 [1877]. 4 pls. 4to. *Leipzig*, 1875.

——. Ueber die Thermoelektricität des Boracites. [Thermo-electricity of Boracite.] 4to. *Leipzig*, 1877.
These 2 papers seem to be part of the series noticed in the GEOLOGICAL RECORD for 1874, p. 235; for 1876, p. 336; and for 1877, p. 235; but the *Ann. Phys. Chem.* is 8vo, whilst these are said to be 4to.

Hansel, V. [Rutile of Modriach.] *Mitth. nat. Ver. Steiermark*, 1877, pp. 7.

Helmhacker, R. Tafeln zur Bestimmung der häufig-vorkommenden Mineralien. [Tables to distinguish Common Minerals.] 8vo. *Vienna,* 1874.

Hilger, A. Mineralanalysen. Wismuthsilbererz, Zinkenit, Fahlerz. [Analyses of Bismuth-silver ore, Zinkenite, and Tetrahedrite.] *Sitz. phys.-med. Soc. Erlangen,* Heft 8. [1876.]

——. Analyse eines Fahlerzes aus dem Schwarzwald. [Tetrahedrite from the Black Forest.] *Ann. Chem. Pharm.* Bd. clxxxv. p. 206. [1877.]
Analysis by **Mutschler.**

Hirschwald, J. Löthrohr-Tabellen. Ein Leitfaden zur chemischen Untersuchung auf trocknem Wege, für Chemiker, Hüttenleute und Mineralogen. Nebst einer Uebersicht über die Zusammensetzung technisch-wichtiger Minerale und Hüttenproducte, so wie einem Schema der wichtigsten quantitativen Lothrohrproben und deren Beschreibung. [Blowpipe Tables.] 8vo. *Leipzig,* 1875.

Hornstein, F. Bemerkungen zu Fischer's Mittheilungen über das Katzenauge. [Remarks on Fischer's Treatise on Cat's-eye.] [1876 or 1877.]

——. Systematische Uebersicht der wichtigsten Mineralien. [Review of Important Minerals.] Pp. 24. [1876.]

Issel, Prof. A. Intorno ad un minerale manganesifero del Senese. [Manganese Mineral.] *Riv. Sci.-ind.* 1876, pp. 8.

Jannettaz, F. Le Chalumeau, Analyses qualitatives et quantitatives. Guide pratique à l'usage des Ingénieurs, Minéralogistes, etc. [The Blowpipe.] Pp. 265. *Paris,* 1876.

Julien, A. A. [Aglaite, n. sp.] *Eng. Min. Journ.* vol. xxii. p. 217 [1877].
Quoted by **Zezi,** see above, p. 268.

Kenngott, J. G. 60 Krystallformennetze. ['Nets' of 60 Crystal Forms.] Ed. 23. Part 2. *Vienna,* 1874.

Klipstein, Dr. v. [Drift Fauna of the Lahn Valley Caves: Occurence of Wavellite and Phosphorite at Staffel.] *N. Jahrb.* 1877, pp. 701–704.
Chiefly on the characters of the minerals.

Kobell, F. von. Ueber die Complementfarben des Gypses im polarisirten Lichte. [Complementary Colours of Selenite in Polarized Light.] *Sitz. k.-bay. Ak. Wiss.* Bd. vi. pp. 206–210. [1876.] *Ann. Phys. Chem.* Bd. viii. pp. 348–352. [1877.]

——. Les Minéraux. Guide pratique pour leur détermination sûre

et rapide au moyen de simples recherches chimiques par voie sèche et par voie humide. [Practical Guide to Mineralogy.] 2nd French edition, translated by **Count Ludovic de la Tour du Pin.** Preface and additions by **F. Pisani.** Pp. 163. 8vo. *Paris*, 1877.
Ed. 1 noted in the Geological Record for 1874, p. 239.

Koch, Dr. A. Asvány- és Közettáni Közlemények Erdélyböl. [Mineralogical and Petrological Notes from Transylvania.] *Ertek. Termész. Kör.* köt. viii. sz. x. pp. 30, plate. [1877] [Shorter German version, *Jahrb. k.-k. geol. Reichs.* Bd. xxvii. *Min. Mitth.* pp. 317–336, noticed in the Geological Record for 1877, p. 238.]
1. Celestine from Bácsi; section of Nummulitic beds, goniometry, analysis. 2. Geology and Mineralogy of the rhyolite and quartz-andesite of M. Csicsó; analysis of andesine, goniometry of that and heulandite. 3. Petrology and Mineralogy of the basalt of the Persány Mts.; notes on olivine, omphacite, augite, and pyrope (garnet). 4. Crystallography of the Maros-Ujvár rock-salt. 5. Adularia of Verespatak: crystallographic note. 6. Glauberite-efflorescence and -water at Klausenburg; crystallography and analysis. 7. Analyses and microscopic structure of elæolite and blue sodalite from Ditró. W. H. D.

Kokscharow, N. von. Ueber das russische Rothbleierz. [Russian Minium-Ore.] *Mém. Ac. Imp. Sci. St. Pétersb.* ser. vii. t. xxiv. no. 5, pp. 26, plate. [1877.]

Koninck, L. L. De. Note sur un échantillon minéralogique (aurichalcite?) recueilli à Flémalle. [Mineral (? Aurichalcite) from Flémalle.] *Ann. Soc. Géol. Belg.* t. iii. pp. lxxv, lxxvi. [1876.]

Krause, G. Ueber die Vorkommen und der Verwendung des Stassfurtits. [Occurrence and Use of Stassfurtite.] 8vo. *Cöthen*, 1877.
Entered under a wrong name in the Geological Record for 1877, p. 265.

Krejci, —. Ueber das krystallographische Gesetz der hemimorphen Gestalten. [Crystallographic Law of Hemimorphic Forms.] *Sitz. k. böhm. Ges. Wiss.* 1875, p. 12.

Krenner, Dr. J. S. A Felsöbanyai Trachyt Wolframitja. [Wolframite in the Felsö-Bánya Trachyte.] *Ertek. Természet. Kör.* köt. vii. sz. xiv. p. 10, plate. [1876.]
Crystallographic description.

——. Magyarhoni Anglesitek. [Hungarian Anglesite.] *Ertek. Termész. Kör.* köt. viii. sz. viii. p. 31; 9 pls. [1877.]
Goniometry, and figures of crystals from Moravicza, Dognácska, Felsö-Bánya, and Borsa-Bánya.

——. [Cryolite Minerals.] *N. Jahrb.* 1877, pp. 504–507.
Goniometric notes.

Lang, H. O. Beiträge zur Physiographie gesteinsbildender Mineralien. [Rock-forming Minerals.] *Nachr. kön. Ges. Wiss. Göttingen*, 1877.

Lang, V. v. Vorläufige Mittheilung über die Lage der optischen Elasticitäts-Axen beim Gyps für verschiedene Farben. [Position of the Axes of Optic Elasticity in Gypsum for various Colours.] *Beiblätt. Ann. Phys. Chem.* 1877, p. 686.

Lasaulx, A. von. [Ardennite, n. sp.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Sitz.* pp. 59, 60. [1874.] See GEOLOGICAL RECORD for 1874, p. 240.

——. [New Fossil Resin of the Sieburg Lignite.] *Ibid.* pp. 166–169. [1874.]
Gives analysis.

——. [New Form of Fluorspar.] *Ibid.* p. 225. [1874.]
Occurs in the Striegau granite.

——. [Mica.] *Ibid.* p. 227. [1874.]

——. [Garnet from Geyer, Saxon Erzgebirg.] *Ibid.* Jahrg. xxxii. pp. 42–44. [1875.]
Crystallographical description.

——. [Minerals from Dernbach, Nassau.] *Verh. nat: Ver. preuss. Rheinl.* Jahrg. xxxiv. *Sitz.* pp. 191, 192. [1877.]
Embolite, Iodargyrite, and *Iodobromite.* The last is new; analysis is given.

——. Jodobromit (Jodbromsilber) von Dernbach in Nassau. [Iodobromite, n. sp.] *Beiblätt. Ann. Phys. Chem.* 1877, pp. 653, 654.

——. [Silver Brom-iodide, Dernbach; Polarization of Sphærolite.] *N. Jahrb.* 1877, pp. 616–620.
Describes the silver-salt and the optic effects.

——. On some new Minerals, and on Doubly-refracting Garnets. *Rep. Brit. Assoc.* for 1876, *Sections*, p. 92. [1877.]
Melanophlogite and *aerinite* are noticed; and the causes of double refraction in certain garnets are discussed.

Laspeyres, H. Die Krystallform des Strontianits von Hamm in Westphalen. [Crystalline Form of Strontianite from Hamm, Westphalia.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. pp. 308–329, pl. ii. [1876.]
Gives bibliography, describes the mode of occurrence, composition, crystalline form, &c.

Laspeyres, H. Beitrag zur Kenntniss der Nickelerze. [Nickel Ores.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiv. pp. 29–53. [1877.] Describes the ores crystallographically and chemically, giving analyses.

——. Die chemische Zusammensetzung des Leadhillits. [Composition of Leadhillite.] *Journ. prakt. Chem.* 1877, pp. 317–320.

Legeza, V. [Santorin Tridymite.] *Földt. Közl.* vol. vi. [1876.]

Lehmann, J. Die pyrogenen Quarze in den Laven des Niederrheins. [Pyrogene Quartz in the Rhine Lavas.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiv. pp. 203–226, pls. ii., iii. [1877.] Crystallographic description.

Luca, S. de. Ricerche Analitiche sopra talune Produzione Stalammitiche della Solfatara di Pozzuoli. No. 2. [Analysis of Stalagmites from the Solfatara of Pozzuoli.] 4to. *Naples*, 1874.

——. Sulla Materia Organica contenuta in talune aragoniti del Museo Mineralogico di Napoli. [Organic Matter in Aragonite.] 4to. *Naples*, 1876.

——. Analisi quantitativa di talune aragoniti di Cianciana nella Sicilia. [Analysis of Sicilian Aragonite.] 4to. *Naples*, 1877.

Makowsky, A. Ueber die Diamanten des Kaplandes auf der Weltaustellung in Wien. [Cape Diamonds.] *Verh. nat. Ver. Brünn*, Bd. xii. p. 16. [1874.]

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~~**Marck, Dr. V. d.** [Supposed Fulgurite from Posen.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Corr.-Blatt*, pp. 70, 71. [1874.] Jahrg. xxxii. *Corr.-Blatt*, p. 47. [1875.] The supposed fulgurite is a Belemnite. An analysis by **Scholz** is quoted from *Archiv Pharm.* Bd. ccliii. p. 541.~~

Maskelyne, Prof. N. S. Notes on some Lectures [on the morphology of crystals] given at Christmas, 1874. 8vo. *London*, 1875.

Metschke, C. Katalog zu den Mineralien-Sammlungen von Jac. Wild sen. in Idar. [Catalogue of a Mineral Collection.] Pp. 24. 8vo. *Leipzig*, 1875.

Meunier, S. Recherches expérimentales sur les sulfures naturels. [Examination of Native Sulphides.] *Compt. Rend.* t. lxxxiv. p. 638. [1877.]

Michel-Lévy, A. De l'emploi du microscope polarisant à lumière parallèle pour la détermination des espèces minérales en plaques minces. [Employment of the Polarizing Microscope with parallel Light for the Determination of Minerals.] *Ann. Mines*, sér. 7, t. xii. p. 392. [1877.]

Mohr, Prof. [Olivine of Dockweiler, Eifel.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Sitz.* pp. 49, 50. [1876.]

——. [Origin of Wad.] *Ibid.* p. 234. [1876.]

Molnár, János. Vöröspataki és Vörösvágási Agalmatolith Vegyelemzése. [Analysis of Agalmatolite, Vöröspatak and Vörösvágas.] *Math. Természet. Közlem.* köt. xi. pp. 31–38. [1876.]

Description, with analyses.

Moulin, T. du. Gespecificeerde lijst de verzamelieg diamantsoorten, voornamelijk afkomstig uit de mijnen van de Kaap de Goede Hoop aan 's Rijks Museum van naturlijke historie ten geschenke gegeven. [List of Cape Diamonds.] P. 1. Fol. 1875.

Muir, M. M. P. Note on a Manganese Ore from New South Wales, and on a Specimen of Native Silver from New Zealand. *Proc. Lit. Phil. Soc. Manch.* vol. xvi. pp. 58–60. [1877.]

The manganese ore (78·72 p. c. of dioxide) is from a large deposit at Bathurst.

Nendtvich, Dr. Karoly. A Parádi Enargit. [Enargite of Parad.] *Math. Termész. Közl.* köt. xiv. pp. 33–35. [1877.]

Gives analysis, quoting others of specimens from N. and S. America, and arriving at the formula $3(Cu_2S)As_2S_5$ with a fraction of antimony. (See GEOLOGICAL RECORD for 1875, p. 261). W. H. D.

Nies, Aug. [Two new Minerals from Dunsberg.] *N. Jahrb.* 1877, p. 176.

Formulæ of Strengite (see GEOLOGICAL RECORD for 1877, p. 245) and another ferric phosphate.

Nordenskiöld, Prof. A. E. Kristallografiska bidrag till Skandinaviske Mineralogie. [Crystallographic Contribution to Scandinavian Mineralogy.] *Bihang k. Svenska Vet.-Akad. Handl.* Bd. ii. no. 2. [1874.]

Papier, A. Essai d'un catalogue minéralogique Algérien. [Catalogue of Algerian Minerals.] Maps and plates. 4to. *Hippone*, 1873–4.

Pfaff, Dr. F. Zur Darstellung der Circularpolarisation durch Glimmerblättchen. [Circular Polarization through Mica Plates.] *Sitz. k.-bay. Ak. Wiss.* Bd. vi. pp. 211–215, plate. [1876 or 1877.]

Preiss, K. Ueber die chemische Constitution des Sternbergits. [Composition of Sternbergite.] *Sitz. k. böhm. Ges. Wiss.* 1875, p. 283.

——. Ueber die Mineralien der Cerovka bei Jicin. [Minerals of Cerovka, Jicin.] *Ibid.* 1876, p. 172.

Rammelsberg, C. Ueber die Zusammensetzung des Speiskobalt und verwandter Mineralien. [Composition of Speisscobalt, &c.] *Ann. Phys. Chem.* Bd. clx. pp. 131–138. [1877.]

Rath, G. vom. [Mineralogical Notes.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Sitz.* pp. 39–41. [1875.]
Topaz from the Ural, Rock-Crystal from Dauphiny, and Calcite from Tyrol.

——. [Chalcedony Concretion, Brazil; Herschelite or Seebachite, Richmond, Victoria; various Minerals.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Sitz.* pp. 202, 203, 280–282, 299–301. [1875.]
Gives analysis of Enstatite from Bamle, Norway.

——. [Pericline-Twin of Albite; Scorodite of Dernbach; Brookite, Arkansas; Microcline.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Sitz.* pp. 13, 14, 38, 102. [1876.]

——. Mineralogische Beiträge. [Mineralogical Notes.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiv. pp. 131–195, pl. i. [1877.]
1. So-called octahedral iron-glance of Vesuvius. 2. Vesuvian Minerals formed by steam, and the parallel growth of augite, hornblende, and biotite crystals from older augite. 3. Twinning of Turnerite (Monazite). 4. Scorodite of Dernbach, Nassau. 5. Paramorphosis of Rutile after Brookite (Arkansite) from Magnet Cove, Arkansas. 6. Octagonal crystals of Rutile from the same. 7. Regular growth of quartz and calcite. Largely crystallographic descriptions. W. H. D.

——. [Mineralogical Notes.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiv. *Sitz.* pp. 4–9, 59–84, 201, 202, 219–227, 250–254. [1877.]
Crystallization of gold; macles of speiss-cobalt, rutile crystals (see Geological Record for 1877, p. 248); zinc-ore of Campiglia, bismuth of Mt. Ramsay, and zinc of Mt. Bischoff, Tasmania; minerals from Hampshire Hills, Australia; Philip Island, Victoria; gold reefs and drifts, Victoria; Ovifak iron; gold-districts of Transylvania. Bournonite-crystals, Bunsenin (see as above); copper of Lake Superior; chalcedony of Oberstein. W. H. D.

Reynolds, J. E. Report from the Chemical Laboratory of Trinity College, Dublin. No. 2. On the Composition of Lievrite, as determined by Mr. Early's Method. *Proc. R. Irish Ac.* vol. iii. ser. ii. no. 1, pp. 52–54. [1877.]
Considers the Elba lievrite as essentially a dicalcic ferroso-ferric silicate. See Geological Record for 1877, p. 249.

Sadebeck, A. Ueber die Bezeichnung der Zwillingsbildungen bei den Krystallen. [Twin Crystals.] *Sitz. Ges. nat. Freunde Berlin*, 1877, pp. 136–140.

Sandberger, F. Ueber Heubachit, ein natürlich vorkommendes Kobaltnickeloxydhydrat. [Heubachite, a native Cobalt-Nickel Hydrate.] *Sitz. k.-bay. Ak. Wiss.* Bd. vi. pp. 238–242. [1876 or 1877.]

From the St. Anthony Mine, near Wittichen. Analysis by **Dr. Zeitschel**, giving the formula

$$3(Co_2Ni_2Fe_2Mn_2)O_3 \,.\, 4(H_2O).$$

W. H. D.

——. [Minerals from Wittichen: Heubachite, n. sp., Todtmoss Ore-beds.] *N. Jahrb.* 1877, pp. 167, 168.

Notes on xanthocone, molybdenum-glance, &c. Analyses of magnetic pyrites by **Prof. Hilger.**

——. [Tetrahedrite-twins; Cat's-eye.] *N. Jahrb.* 1877, pp. 275, 276.

Analysis by **Dr. Mutschler** of a complex tetrahedrite from Kahl. Note on cat's-eye from the diabase of Weilburg.

——. [Sphærite, Hübnerite, Haidingerite, &c.] *N. Jahrb.* 1877, pp. 508, 509.

Crystallographic and chemical notes. The Nevada Hübnerite contains Thallium.

Schmidt, Sandor. [Mineralogical Notes.] *Földt. Közl.* köt. vii. [1877.]

Notes the alteration of Galenite into Anglesite, Leadhillite, and Cerussite, the discovery of pyrostilpnite in Spain, the effect of hydration in the Mogyorod wax-opal, and the finding of apatite in coarse granite in Rio Janeiro. W. H. D.

Schmidt, Sandor, and **Andr. Semsey.** [Mineralogical Notes.] *Földt. Közl.* köt. vii. [1877.]

Schottky, A. Die Kupfererze des Districtes von Aroa Venezuela. [Copper Ores of Aroa, Venezuela.] Pp. 36. 8vo. *Breslau,* 1877.

Schrauf, A., and **E. S. Dana.** On the Thermo-electrical Properties of some Minerals and their Varieties. *Proc. Amer. Assoc.* vol. xxiii. [1875.]

Schumacher, Dr. W. [Felspar, Ratisbon.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Sitz.* p. 235. [1876.]

Seligmann, G. Beschreibung der auf der Grube Friedrichssegen vorkommenden Mineralien. [Minerals from the Friedrichssegen Mine, Lahn Valley.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. pp. 241–266, pl. i. [1876.]

Crystallographical notes on Smithsonite, pyromorphite, copper-ores, native silver, pyrites, Göthite, and calcite.

Sella, C. Q. Lezioni di Cristallografia. [Crystallographical Lectures.] (Illustrated.) Ed. 2. 8vo. *Turin*, 1877.

Selle, A. de. Comparaison et Transformation des Notations cristallographiques de Lévy, Miller, Weiss, Naumann, Dana. [Comparison of Crystallographic Notations.] 4to. *Paris*, 1874.

Soret, J. L., and E. Sarasin. Ueber die Drehung der Polarisationsebene durch den Quarz. [Rotation of Plane of Polarization by Quartz.] *Beiblätt. Ann. Phys. Chem.* Bd. i. pp. 113, 115, 396–398. [1877.]

Streng, Dr. A. Ueber die mikroskopische Unterscheidung von Nephelin und Apatit. [Microscopic Distinction between Nepheline and Apatite.] *Jahrb. k.-k. geol. Reichs.* Bd. xxvi. *Min. Mitth.* pp. 167–170. [1876.]

A microscopic section is treated with excess of concentrated nitric-acid solution of molybdate of ammonia; if apatite be present the well-known yellow precipitate of molybdo-phosphate occurs. Other chemical reactions are recommended. F. W. R.

Szabó, Joszef. Egy új modszer a földpátok meghatá rozására közetekben. [Method of Determination of Felspar in Rocks.] *Ertek. Természet. Köréböl*, köt. iv. sz. v. [1874.] (Published in German in 1876: see GEOLOGICAL RECORD for 1876, p. 243.)

Szecskay, Istvan. Krystálytani Vizsgalatok a Betleri Wolynon. [Crystallological Notes on Betler, Volhynia.] *Ertek. Természet. Kör.* köt. vii. sz. ix. pp. 28; 3 pls. [1876.]

Crystallography of barytes.

Szombathy, J. [Cellular Structure in Graphite.] *Ber. nat. Ver. techn. Hochsch. Wien*, Bd. i. [1877.]

Terreil, —. Analyse du platine natif magnétique de Nischne-Tagilsk (Oural). [Analysis of Native Magnetic Platinum from Nischne-Tagilsk (Ural).] *Compt. Rend.* t. lxxxii. p. 1116. [1876.]

Includes some observations made by **Daubrée** concerning the presence of nickel in native platinum.

Trautschold, H. [Black Gold from Irkutsk.] *N. Jahrb.* 1877, pp. 497, 498.

Gives analysis by **Kupffer.**

Tribolet, M. de. Tableaux minéralogiques à l'usage de l'enseignement supérieur scientifique. [Mineralogical Tables.] Pp. 16. 8vo. *Neuchâtel*, 1877.

Vallée-Poussin, Ch. de la. Notes sur les Cristaux de Quartz de la Carrière de Nil-Saint-Vincent. [Quartz Crystals, Belgium.] *Ann. Soc. Géol. Belg.* t. iii. pp. 53–75. [1876.]

The crystals occur in Silurian quartzite overlain by Bruxellian Sand and Drift. The peculiar forms are due to solution and redeposition of parts of the crystals. W. H. D.

Voigt, W. Untersuchung der Elasticitätsverhältnisse des Steinsalzes. [Elasticity of Rock Salt.] 8 pls. 4to. *Leipzig*, 1874.

~~**Volger, O.** [Strontianite, Westphalia.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxi. *Corr.-Blatt*, pp. 98–101. [1874.]~~
~~Note of occurrence. **Dr. v. d. Marck** adds further particulars.~~

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Websky, —. Ueber Hornquecksilber von el Doctor in Mexico. [Native Calomel, Mexico.] *Monatsb. k. preuss. Ak. Wiss.* 1877, pp. 461–467, plate.
Crystallographic description.

Zepharovich, V. v. Neue Mineral-Vorkommen auf der Eisenerz-Lagerstätte von Moravicza im Banat. [New Minerals from Moravicza Iron Ore-beds.] *Lotos*, 1877.

——. Mineralogische Notizen. [Mineralogical Notices.] *Lotos*, 1877.
Deals with Hungarian quartz, pyroxene, magnetite, bismuthine, fassaite, chrysocolla, &c.

Zezi, P. Le nuove specie minerali studiate e descritte nell' anno 1876. [New Minerals, 1876.] *Boll. R. Com. geol. Ital.* anno viii. pp. 200–226. [1877.]
Reproduces descriptions and analyses. (All the originals noted in the GEOLOGICAL RECORD for 1876, 1877, or 1878.)

See also:—

Anon. Russian Minerals: p. 42.

Blanchard, F. Cassiterite, &c., Campiglia: p. 50.

Cassin, —. Gas-springs, Chatillon: p. 127.

Ferretti, A. Analyses of Volcanic Gases and Salts, Modena: p. 65.

Finot, E. Analysis of Cave Gas, Auvergne: p. 132.

Fleischer, Dr. A. Analysis of Felspar: under **Koch**, p. 228.

——. Ditro Sodalite: p. 285.

Gjers, J. Analysis of Cleveland Ironstone: p. 38.

Guiscardi, Prof., and **A. Scacchi.** Vesuvian Minerals: under **Palmieri,** p. 146.

Hilger, Prof. A. Keramohalite, n. sp.: p. 228.

Issel, A. Zeolite, &c., Liguria: p. 79.

Klunge, A. Analysis of Siderolite, Neuchâtel: under **Tribolet,** p. 157.

Rigaud, F. Analyses of Iron-ores, Haute Marne: p. 104.

Ritz, R. Minerals of the Valais: p. 150.

Römer, —. Mineral Localities, Silesia: p. 150.

Schaller, —. Alpine Quartz: p. 152.

Seeland, F. Ores of Manganese and Iron, Uggowitz: p. 108.

Selle, A. de. Course of Mineralogy: *post*, under GENERAL.

Trippke, P. Minerals of Silesian Basalts: p. 223.

MINERAL WATERS.

Anon. Eaux Minérales et Eaux Potables de la France analysées au Bureau d'Essai de l'École des Mines de 1845 à 1877. 4to. *Paris.* Pp. x, 150.

Gives complete analyses of 180 mineral waters from 35 Departments, and of 111 potable waters from 22 Departments. The Arrondissement and the date for each analysis given. W. T.

Anon. Les Eaux minérales de la Hongrie. [Hungarian Mineral Waters.] Pp. 147. 8vo. *Budapest.*

A classified account of many mineral waters (120 places, 210 analyses).

Ballo, —. Mineralquellen bei Budapest. [Mineral Waters of Buda-Pesth.] *Ber. deutsch. chem. Ges.* Jahrg. xi. no. 15.

Bernáth, József. A Magyarországi Asványvizek Lelhelyei. [Hungarian Mineral Waters.] *Math. Természet. Közlem.* köt. xv. pp. 427–477.

A classified list of 403 mineral springs in Hungary.

Bizio, —. Analisi chimica dell' acqua minerale dell' antica fonte di Pejo. [Analysis of the Mineral Water of the Ancient Fountain of Pejo.] *Atti R. Ist. Ven. Sci.* disp. 7.

Borchers, W. Ein neues Verfahren zur Bestimmung der Kohlensäure in natürlichen Mineralwassern. [Process for the Determination of CO_2 in Natural Mineral Waters.] *Journ. prakt. Chem.* pp. 358–371.

Carpenter, W. L. Notes on Water from the Severn Tunnel Springs. *Rep. Brit. Assoc.* for 1877, p. 511.

Criminell, Luigi. Annuario-manuele delle acque minerali. [Annuary of Mineral Waters.] *Leipzig.*

Francia, Julia. Plani i tserteji ke obschei programmie rabote razviedotchniche i ulutchscheniya istotchnikove i vanne Kavkazskiche Mineralniche vode. [General Programme of Exploration and Improvement of the Springs and Baths of the Caucasian Mineral Waters.] Translated by **A. A. Verlin.** 8vo. *Tiflis.*

Fresenius, R. Chemische Untersuchung der warmen Quellen von Schlangenbad. [Thermal Springs of Schlangenbad.] *Journ. prakt. Chem.* pp. 303–321.

Gorup-Besanez, E. v. Chemische Analyse der Schönborn-Quelle bei Kissingen. [Analysis of the Schönborn Spring, Kissingen.] *Journ. prakt. Chem.* pp. 371–390.

Hauer, Carl von. Die Mineralquellen von Ischl. [Mineral Springs of Ischl.] *Verh. k.-k. geol. Reichs.* pp. 123–127.

Gives detailed analyses of water from the Sulphur-springs, the Klebelsberg Well, and the Maria Louise Springs, with less minute analyses of water from the Ischl Salzberg. G. A. L.

——. Die Ofner Bitterquellen. [Bitter Springs of Ofner.] *Verh. k.-k. geol. Reichs.* pp. 361–364.

Gives full analysis of the waters of the Stefan and Hildegarde springs. Their temperature ranges from 9° to 10° R.

Hayes, A. A. An Extraordinary Mineral Spring. *Analyst*, no. 24, p. 222, from *Boston Journal of Chemistry*.

Hehner, Otto. Analysis of a Remarkable Mineral Water. *Chem. News*, vol. xxxviii. p. 249.

A spring about 20 miles from Cape Town. Total iron in 100,000 parts = 440·38.

Ilosvay, Dr. Lajos. Kölemények a M. K. Egyetem Vegytani Intézetébol. A Luhi-i "Margit" Forrás Vegyi Elemzése. [Analysis of the Margaret Spring at Luhi.] *Math. Természet. Közlem.* köt. xx. pp. 137–144.

Körner, W. Analisi dell' acqua minerale di Bacedasco nel Piacentino. [Analysis of the Mineral Water of Bacedasco, Piacenza.] *Rend. R. Ist. Lomb.* ser. 2, vol. xi. nos. 11, 12.

Kyle, J. J. On the Composition of the Rivers Parana and Uruguay. *Chem. News*, vol. xxxviii. p. 28.

Gives analysis of the waters of the Rivers Plate, Parana, and Uruguay. About 40 p. c. of the total solid matter in the Uruguay consists of soluble silica, whence probably the reputed petrifying properties of this river. Regards this silica as the raw material of the famous agates of the Uruguay. F. W. R.

Lebedeff, I. F. Iletskiya mineralniya Vodi i gryazi i kumisoletchebnoe zavedenie be Iletskoi zamtie (Orenb. gub.). [Mineral Waters, Mud-baths, and Koumis Establishments at Iletsk, Orenburg.] 8vo. *Orenburg.*

Molnár, János. "Aesculap" Budai Uj Keserüviz Vegytani Elemzése. [Analysis of the New Bitter Spring "Æsculapius" at Buda.] *Math. Természet. Közlem.* köt. xv. pp. 399–405.

Nendtvich, Dr. Károly. A Stubnai Hevvizek Vegyelemzése. [Analysis of the Stubno Thermal Springs.] *Math. Természet. Közlem.* köt. xv. pp. 393–397.

Planta-Reichenau, — von. Neue Analyse der Heilquellen von Passugg, Solis und Tiefkasten im Canton Graubündten, Schweiz. [Analyses of 3 Spas of the Grisons.] *Ber. deutsch. chem. Ges.* Jahrg. xi. no. 14, and *Jahresb. nat. Ges. Graubundens*, n. F. Bd. xxi. p. 98.

Rik, Dr. Gustav. Az "Erdöbényei Vas-timsós Asványvíz" Vegyi Elemzése. [Analysis of the "Erdobény Iron-alum Mineral Water."] *Math. Természet. Közlem.* köt. xv. pp. 131–135.

Skey, W. On certain of the Mineral Waters of New Zealand. *Trans. N. Zealand Inst.* vol. x. pp. 423–448.

Gives the results of the analyses of 19 mineral waters.

Thomas, J. W. On the Water of Taff's Well [near Cardiff]. *Trans. Cardiff Nat. Soc.* vol. ix. pp. 48–52.

Chalybeate spring, having a temperature of 65°·6 F., and evolving nitrogen. Results of three analyses given.

Tichborne, C. R. C. On some Peculiarities of the Vartry Water. *Rep. Brit. Assoc.* for 1877, pp. 517, 518. and *Chem. News*, vol. xxxviii. p. 191.

Vohl, —. Bestandtheile des im vorigen Jahre in der Eifel bei Pelm am Fusse der Casselberg erbohrten und jetzt "Gerolsteiner Schlossbrunnen" genannten Mineralbrunnens. [Composition of the Gerolstein Castle Mineral Spring at Pelm, Eifel.] *Ber. deutsch. Chem. Ges.* Jahrg. xi. no. 3.

——. Die Mineralbestandtheile der Quelle zu Marpingen in der Bürgermeisterei Alsweiler, Kreis St. Wendel, Regierungsbezirk Trier. [Mineral Springs, Treves District.] *Ibid.* no. 8.

Willm, Ed. Analyse des eaux minérales sulfureuses d'Aix en Savoie et de Marlioz. [Analysis of Sulphurous Waters of Aix (Savoy) and Marlioz.] *Compt. Rend.* t. lxxxvi. pp. 543–546.

The temperatures are:—Sulphur spring of Aix 43°·5 C.; so-called *Alum* spring of Aix 44°·6; Sulphur spring of Marlioz 11°. Detailed analyses are given. G. A. L.

Willm, Ed. Sur l'eau minérale de Challes, en Savoie. [Mineral Water of Challes, Savoy.] *Compt. Rend.* t. lxxxvi. pp. 613–616.

Gives full analyses of the water from the two springs of this place (6 kilometres from Challes). They are strongly sulphurous, and contain a large percentage of iodine. The temperature is 10°·5 C.

G. A. L.

SUPPLEMENT FOR 1874–1877.

Bernáth, József. Közlemenyek a budai Keserüsóforrásokról. [Notes on the Buda Mineral Springs.] *Math. Természet. Közlem.* köt. xii. pp. 135–151. [1876.]

Gives several analyses.

——. A Budai Kinizsi-Forrásviznek Vegyelemzése. [Analysis of the Kinizsi Spring, Ofen.] *Math. Termész. Közl.* köt. xiv. pp. 27–31. [1877.]

——. Adatok Magyarország Asvanyvizismejehez. [Notes on Hungarian Mineral Waters.] *Math. Természet. Közlem.* köt. xiii. pp. 245–269. [1877.]

Bougiouka, P. Peri tōn aidēpsiōn hudatōn. [On Medicinal Waters.] ? *Athens*, 1877.

Buchner, —. Analyse der Morizquelle in Sauerbrunn bei Rohitsch in Südsteiermark. [Analysis of the Maurice Spring, S. Styria.] *Sitz. k. Ak. Wiss. Wien*, Bd. lxxi. p. 309. [1875.]

Burresi, Pietro. Sulle virtù terapeutiche dell' acque termominerali di Chianciano. [Medical Properties of the Thermo-mineral Waters of Chianciano.] *Siena*, 1874.

Gives a new analysis of these waters by **Prof. G. Campani** (see below).

Campani, Prof. Giovanni. Nuova analisi dell' acqua santa di Chianciano. [New Analysis of the Waters of Chianciano.] *Sienna*, 1875.

Credner, —. [Oeynhausen Baths.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiv. *Sitz.* pp. 100–102. [1877.]

Statistics of temperatures and salinity of these thermal springs, with analyses by **Finkener** (1876).

Barnes, Joseph, and Harry Grimshaw. On a mineral water from Humphrey Head, near Grange-over-Sands. See p. 268.

Dechen, — von. [Oeynhausen Springs.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Sitz.* pp. 87–92. [1876.]

——. [Carbonated Spring in the Kyll Valley.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiv. *Sitz.* pp. 207–209.
The country consists of Devonian (Eifelian) rocks, with lavas and tuffs.

Dressel, L. Estudio sobre algunas aguas minerales del Ecuador. Pp. 76. 4to. *Quito*, 1876.

Filhol, Prof. E. Note sur la Nature du Principe Sulfuré des Eaux minérales des Pyrénées. [Nature of the Sulphureous Principle of the Mineral Waters of the Pyrenees.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 346–351. [1877.]
Controversial, with M. Garrigou. Believes that it is monosulphide of sodium.

Fleischer, Dr. Antal. Vizsgálatok a Kolozsvári M. K. Tud. Egyetem Vegytani Intezetéböl. II. [Researches of the R. Hungarian Chemical Institute at Klausenburg.] *Ertek. Termész. Kör.* köt. vii. sz. i. pp. 28. [1876.]
3. Analysis of the Málnas mineral water (carbonated saline). 4. Remarks on the Büdösön Sulphur Well. 5. Composition of the Ditro Sodalite. Formula $NaCl+Na_3HSiO_4+(Al_2)^{vi}{}_2 3SiO_4$. W. H. D.

Freytag. [Oeynhausen Thermal Baths.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. 34, *Corr.-Blatt*, pp. 46–51. [1877.]
Gives analyses.

Gintl, W. [Chemical Analysis of the Mineral Water of Neudorf, near Petschau, in Bohemia.] *Sitz. k. Ak. Wiss. Wien*, t. lxxv. p. 519. [1877.]

Graff, —. [Oeynhausen Springs.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Corr.-Blatt*, pp. 52–55. [1875.]
These thermal waters rise by a bore-hole in Lias, Keuper, and Muschelkalk.

Hauer, C. v. Die Eisenquelle in Ober-Wied-Lingau bei Wien. [Chalybeate Spring near Vienna.] *Verh. k.-k. geol. Reichs.* 1877, pp. 288, 289.
Gives analysis, &c.

Huguet, Prof. —. Etudes sur les Vapeurs des Eaux minérales. [Vapours of Mineral Waters.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 362–368. [1877.]
Notes the presence of mineral matters in these vapours, and gives analyses of those matters. Gives an analysis of the gas of the Royat water. W. W.

Ilosvay, Lajos. A Buziási Jozsefforrás Vegyi Elemzése. [Analysis of the Joseph Well, Buzias.] *Ertek. Termész. Kör.* köt. vi. sz. x. pp. 30–35. [1875.]

Kachler, —. Analyse des Poschitzer Sauerbrunnens. [Analysis of the Poschitz Acid Spring.] *Sitz. k. Akad. Wiss. Wien,* Abth. ii. t. lxx. p. 654. [1874.]

Lefort, Jules. Nouvelles Expériences sur l'Arsenic de l'Eau minérale de la Bourboule (Puy-de-Dôme). [Arsenic of the Mineral Water of La Bourboule.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 338–346. [1877.]
Notes the proportion of arsenic in the water of the various springs.

Lengyel, Bélá. A Borszéki "Boldizsár-kút" Vegyelemzése. [Analysis of the Boldizsar Spring.] *Ertek. Termész. Kör.* köt. vi. sz. xii. pp. 10–14. [1876.]

Luca, S. de. Sopra una nuova Sorgente di Acqua Termo-minerale scoperta nella Solfatara di Pozzuoli. [New Thermo-Mineral Spring in the Pozzuoli Solfatara.] 4to. *Naples,* 1874.

Scoperta !

——. Ricerche Chimiche sopra talune Acque esistenti presso il comune di Cardinale in Provincia di Catanzaro. [Analysis of the Waters of Cardinal, Catanzaro.] 4to. *Naples,* 1877.

Molnár, János. A " Budai Rákóczy " Keserü Viznek Vegyelemzése. [Analysis of the Bitter Spring of Rákóczy (Ofen).] *Math. Termész. Közl.* köt. xiv. pp. 17–25. [1877.]

Mure, J. A. Analyse de l'Eau du Puy de la Poix. [Analysis of the Water of Puy de la Poix.] *Compt. Rend. Assoc. Franç.* 5 sess. pp. 1067–1069. [1877.]
This bituminous spring is a league N.W. of Clermont, and contains much mineral matter, the water being like that of the Dead Sea.

Plunkett, W., and **L. Studdert.** Report on the Solid and Gaseous Constituents of the Mallow Spa, in the County of Cork. *Proc. R. Irish Ac.* ser. 2, vol. iii. p. 75. [1877.]

Rik, Dr. Gustav. A Borszéki "Erdei-kút" Vegyelemzése. [Analysis of the Erdei Spring.] *Ertek. Termész. Kör.* köt. vi. sz. xii. pp. 21–27. [1876.]

—— [**Rick**]. A Borszéki " Uj Sáros Fürdö " Vizenek Vegyelemzése. [Analysis of the New Saros Bath Water.] *Ertek. Termész. Kör.* köt. vi. sz. xii. pp. 39–43. [1876.]

Ring, Armin. A Buziási Mihályforrás Vegyi Elemzése. [Analysis of the Michael Well, Buzias.] *Ertek. Termész. Kör.* köt. vi. sz. x. pp. 23–29. [1875.]

Rohrbach, Dr. Kálmán. A Borszéki "Kossuth-kút" Vegyelemzése. [Analysis of the Kossuth Spring.] *Ertek. Termész. Kör.* köt. vi. sz. xii. pp. 15–20. [1876.]

——. A Borszéki "Uj Lobogo Fürdö" Vizenek Vegyelemzése. [Analysis of the New Lobogo Bath Water.] *Ibid.* pp. 35–38. [1876.]

Scherfel, Aurél v. A tatrafüredi "Castor" és "Pollux" ásványforrások vegytani elemzése. [Analysis of the Mineral Springs Castor and Pollux in the Tatra.] *Math. Termész. Közlem.* köt. xii. pp. 1–17. [1876.]
Gives full analyses of the waters, and of ochre deposited from them.

——. Lejbicz-kénfürdö Kénesvizének Vegytani Elemzése. [Analysis of the Lejbicz Kénfürdö Sulphur-Waters.] *Math. Természet. Közlem.* köt. xiii. pp. 271–284. [1877.]

Schopper, Gyula. A Borszéki "László-kút" Vizenek Vegyelemzése. [Analysis of the László Spring.] *Ertek. Termész. Kör.* köt. vi. sz. xii. pp. 28–34. [1876.]

Schvarczer, Dr. —. A Hortobágyi Keserüviz Elemzése. [Analysis of the Hortobágy Bitter Water.] *Ertek. Termész. Kör.* köt. viii. sz. ii. pp. 12. [1877.]

Than, Karolyi. A Margitszigeti Hévforras Vegyi Elemzése. [Analysis of the Margaret Island Hot Spring.] *Ertek. Természet. Kör.* köt. vi. sz. ix. pp. 15. [1875.]

——. A Borszéki "Fö-kút" Vegyelemzése. [Analysis of the Fö Spring.] *Ertek. Termész. Kör.* köt. vi. sz. xii. pp. 1–9. [1876.]

Volkmer, —. Das Wasser des k. k. Artillerie-Arsenals zu Wien. Als Beitrag zur Kenntniss der Beschaffenheit des Wassers von Wien. *Sitz. k. böhm. Ges. Wiss.* Abth. ii. t. lxx. p. 533. [1874.]

Winter, F. Einige Notizen zur Analyse der Mineralquelle bei Gerolstein in der Eifel. [Note of Analysis of the Gerolstein Mineral Spring, Eifel.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Corr.-Blatt,* p. 40. [1875.]

——. Soolquelle bei Saarburg. [Mineral Water, Saarburg, Trèves.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxii. *Corr.-Blatt,* p. 64. [1875.]

Zsigmondy, Bela. [Hot Spring of Ránk-Herlány, near Kaschau.] *Természet. Közlöny,* köt. vii. [1875.]

See also:—

Beesley, T. Alkaline Spring, Warwickshire: p. 3.

Classen, Dr. A. Mineral Springs, Eifel: under **Ribbentrop,** p. 150.

Lotti, B. Sulphur-spring of Petriolo: p. 89.

Schroeckinger, J. v. Thermal Spring, Brux: p. 107.

Zsigmondy, W. Wells, Budapest: p. 123.

PALÆONTOLOGY.

1. *VERTEBRATA.*

Sub-Editor Prof. L. C. MIALL, F.G.S.

Acconci, —. Resti di Mammiferi fossili ritrovati a Cucigliana. [Mammals from Cucigliana.] *Proc.-verb. Soc. Tosc. Sci. Nat.* p. xx.

The following are recorded—*Rhinoceros hemitœchus*, *Hyœna spelœa*, *Sus afer*, *Cervus elaphus.*

Adams, Prof. A. L. On the Recent and Extinct Irish Mammals. *Proc. R. Dublin Soc.* n. s. vol. ii. pt. i. pp. 45–86, pls. i.–v.

Gives a list of the Irish fossil Mammals; describes Ursine remains from Leitrim, Longford, Westmeath, King's County, Co. Kildare, Waterford, Co. Limerick, and gives a table of the dimensions of crania of bears. R. B. N.

——. Report on the History of Irish Fossil Mammals. *Proc. R. Irish Ac.* ser. ii. vol. iii. no. 2, pp. 89–100 (abstract).

Allen, Prof. J. A. Description of a Fossil Passerine Bird from the Insect-bearing Shales of Colorado. *Bull. U. S. Geol. Surv. Terr.* vol. iv. no. 2, p. 443, plate and figures; and *Amer. Journ.* ser. 3, vol. xv. pp. 381–384.

Describes the almost entire skeleton, with feathers, of *Palæospiza bella*, n. gen. and sp., from the Florissant Shales.

Anon. Local Finds. *Trans. Newbury Field Club*, vol. ii. pp. 256, 259.

i.–v. refer to antlers of red deer, and to bones from white marl [shell-marl] and peat. Measurements of the former are given by **Luke Lowsley.** xxiii. refers to bones and antlers found in Newbury.

——. [**A. C.**] Fossil Footprints. *Leisure Hour*, pp. 743–746; 4 woodcuts.

Describes the impressions of the tracks of birds in the Trias of the Connecticut valley in the United States, and of labyrinthodonts in the Carboniferous series in Pennsylvania. T. M. H.

Anon. Note on *Dinichthys*. *Annals*, ser. 5, vol. i. pp. 350–352.

On a paper by Prof. J. S. Newberry, in *Arch. Sci. Phys. Nat.* t. lix. p. 195 (taken from Geological Survey of Ohio; Palæontology I. and II.), giving the relations of *Dinichthys* to other fish. W. H. D.

Bachmann, Prof. I. Fossile Eier aus den obern Süsswasser-Molasse der Umgebung von Luzern. [Fossil Eggs from the Molasse of Lucerne.] *Abh. schweiz. pal. Ges.* Bd. v. pp. 1–7, pl.

Describes eggs found in the upper freshwater Molasse near Lucerne. These are compared with the eggs of crocodiles, chelonia, snakes, and birds; but nothing very definite can be said as to their affinities. E. T. N.

Barkas, W. J. On the Sphenoid, Cranial-bones, Operculum, and supposed Ear-bones of *Ctenodus*. *Journ. R. Soc. N. S. Wales*, vol. xi. pp. 51–57.

A general and particular account of the above-named bones of *Ctenodus*, with references to many other papers.

——. On the Scapula (?), Coracoid, Ribs, and Scales of *Ctenodus*. *Journ. R. Soc. N. S. Wales*, vol. xi. pp. 58–64.

A continuation of the previous paper; shows the affinity of *Ctenodus* with *Ceratodus*.

——. *Ctenacanthus*, a spine of *Hybodus*. *Journ. R. Soc. N. S. Wales*, vol. xi. pp. 145–155.

Compares micro- and macroscopically the spines of *Hybodus* and *Ctenacanthus*, and concludes that both the *Ctenacanthus* and *Cladodus* should be abolished, and the genus *Hybodus* regarded as a Coal Measure genus. E. T. N.

——. On a Dental peculiarity of the Lepidosteidæ. *Journ. R. Soc. N. S. Wales*, vol. xi. pp. 203–207.

All the fishes of this family have teeth with enamel tips; and any placed in it without this peculiarity are wrongly placed.

Bassani, F. Ricerche sui pesci fossili del miocene medio di Gahard (Ille-et-Vilaine), in Francia. [Fossil Fish of M. Miocene of Ille-et-Vilaine.] *Atti Soc. Ven.-Trent. Sci. Nat.*

——. Ichthyodontolitha Veneta. Pesci fossili del Veneto. [Fossil Fish, Venetia.] 8vo. *Padua.*

Bosniaski, Dr. S. de. Sui Fossili degli schisti miocenici del Gabbro e in special modo sui Pesci. [Miocene Fossils of the Gabbro, especially the Fishes.] *Proc.-verb. Soc. Tosc. Sci. Nat.* pp. xviii, xix.

Refers chiefly to the fish, of which many species are new. About 37 species are noted.

——. Nuove specie di Pesci fossili provenienti dagli strati del Tripoli del Gabbro. [New Miocene Fish.] *Proc.-verb. Soc. Tosc. Sci. Nat.* p. xxx.

The remains found are referred to *Chrysophrys aurata* and *Gobius sarmatianus*.

Botti, Ulderigo P. Nota sopra una nuova specie di *Myliobates.* [New *Myliobates.*] *Atti. Soc. Tosc. Sci. Nat.* vol. iii. pp. 371–382.

M. salentinus, n. sp., from M. Miocene, Galugnano, Otranto, is founded on a palatal tooth.

Brandt, J. F. Mittheilungen über die Gattung *Elasmotherium*, besonders den Schädelbau derselben. *Mém. Ac. Sci. St. Pétersb.* sér. 7, t. xxvi. no. 6, pp. 36; 6 plates.

Treats especially of the skull, which is described in detail, and compared with *Rhinoceros tichorhinus* and other mammalian forms; measurements of the skull and lower jaw are given, and the distribution and geological age of the genus remarked on. E. T. N.

——. Tentamen synopseos Rhinocerotidum viventium et fossilium. [Living and Fossil *Rhinoceridæ.*] *Mém. Ac. Sci. St. Pétersb.* sér. 7, t. xxvi. no. 5, pp. 66, plate.

Brown, T. C. Teeth and Vertebræ of Extinct Sharks [fossils obtained in Malta]. 2 photographs. 8vo. *Cirencester.*

Capellini, Prof. G. *Pachyacanthus* vel *Priscodelphinus.* *Atti R. Ac. Linc.* ser. 3, *Trans.* vol. ii. pp. 49–52.

Pachyacanthus is a Squalodont dolphin.

Clarke, Rev. W. B. On *Dromornis australis* (Owen), a new Fossil Bird of Australia. *Journ. R. Soc. N. S. Wales*, vol. xi. pp. 41–49.

Records the discovery of a fragment of a pelvis of a large bird at a depth of 200 ft. at the Canadian Gold Lead, since described by Prof. Owen as *Dromornis australis.* R. E., Jun.

——. Notice of a New Fossil Extinct Species of Kangaroo, *Sthenurus minor* (Owen). *Journ. R. Soc. N. S. Wales*, vol. xi. pp. 209–212.

Chiefly extracts from Prof. Owen's paper noticed in the GEOLOGICAL RECORD for 1877, p. 292. Found near the Canadian Gold Lead.

Cope, Prof. E. D. Descripitons [Descriptions] of Fishes from the Cretaceous and Tertiary Deposits West of the Mississipi River. *Bull. U. S. Geol. Surv. Terr.* vol. iv. pp. 67–77.

Describes the new species :—*Triaenaspis* (n. gen.) *virgulatus*, *Leptotrachelus longipinnis*, *Ichthyotringa* (n. gen.) *tenuirostris*, *Spaniodon simus*, *Sardinius nasutulus*, *S. lineatus*, *S. percrassus*, Cretaceous, Dakota; *Trichophanes foliarum*, Tertiary, Colorado; *Priscacara oxyprion*, *P. pealei*, Green River Beds, Wyoming; *P. clivosa* and *Dapedoglossus æquipinnis*, no locality or formation stated. W. H. D.

——. Professor Owen on the Pythonomorpha. *Bull. U. S. Geol. Surv. Terr.* vol. iv. pp. 299–311.

Criticizes the work noticed in the GEOLOGICAL RECORD for 1877, p. 291, opposing Owen in—1. Questions of fact; 2. Homological determinations; 3. Affinities. Rehearses the essential ordinal characters, and defends the name adopted. W. H. D.

Cope, Prof. E. D. Descriptions of New Extinct Vertebrata from the Upper Tertiary and Dakota Formations. *Bull. U. S. Geol. Surv. Terr.* vol. iv. pp. 379–396.

Cariacus dolichopsis, Postpliocene, Indiana; *Auchenia vitakeriana*, Pliocene, Oregon; *Ticholeptus* (n. gen.) *zygomaticus*, Miocene, Montana; *Aphelops fossiger*, *A. malacorhinus*, *Mylagaulus* (n. gen.) *sesquipedalis*, Loup Fork beds, Kansas; *Mylodon sodalis*, *Graculus macropus*, *Anser hypsibatus*, *Cygnus paloregonus*, Pliocene, Oregon; *Hypsirophus* (n. gen.) *discurus*, Dakota Beds, Colorado; *Brachyrophus* (n. gen.) *altarkansanus*, *Amphicotylus* (n. gen.) *Lucasii*, *Tichosteus æquifacies*, Colorado; *Xerobates orthopygius*, *X. cyclopygius*, and *Pseudemys Hillii*, Loup Fork Beds, Kansas. W. H. D.

——. On the Brain of *Procamelus occidentalis*. *Proc. Amer. Phil. Soc.* vol. xvii. pp. 49–52, pl. i.

This and the following 4 were wrongly entered in the GEOLOGICAL RECORD for 1877, p. 280 (which see) as from vol. xvi.

——. On the Vertebrata of the Bone Bed in Eastern Illinois. *Proc. Amer. Phil. Soc.* vol. xvii. pp. 53–64.

——. On some new or little known Reptiles and Fishes of the Cretaceous No. 3 of Kansas. *Proc. Amer. Phil. Soc.* vol. xvii. pp. 176–181.

——. Descriptions of Extinct Vertebrata from the Permian and Triassic Formations of the United States. *Proc. Amer. Phil. Soc.* vol. xvii. pp. 182–193.

——. On Reptilian remains from the Dakota Beds of Colorado. *Proc. Amer. Phil. Soc.* vol. xvii. pp. 193–196.

——. Descriptions of new Vertebrata from the Upper Tertiary Formations of the West. *Proc. Amer. Phil. Soc.* vol. xvii. no. 100, pp. 219–231. (*Pal. Bull.* no. 28.)

Describes the following new species:—

Mammalia.

1. From Loup Fork Beds (U. Miocene), Kansas and Montana.

Pithecistes (n. gen. Primates) brevifacies.
Brachymeryx (n. gen. Ungulates) feliceps.
Cyclopidius (n. gen. Ruminants) simus.
C. heterodon.
Blastomeryx borealis.
Dicotyles serus.
Tetralophodon campestre.

2. From Pliocene, Oregon and Washington Territories.

Cervus fortis.
Taxidea sulcata.

Chelonia, from Pliocene, Texas.

Pseudemys bisornatus.
Cistudo marnochii.

Pisces, from Pliocene, Oregon.

Anchybopsis breviarcus, A. altarcus.
Alburnops angustarcus, A. gibbarcus.

W. H. D.

Cope, Prof. E. D. On some Saurians found in the Triassic of Pennsylvania, by C. M. Wheatley. *Proc. Amer. Phil. Soc.* vol. xvii. no. 100, pp. 231, 232.

Thecodontosaurus gibbidens and *Palæosaurus fraserianus* are new. *Palæoctonus aulacodus* is placed in *Suchoprion*.

——. On the Vertebrata of the Dakota Epoch of Colorado. *Proc. Amer. Phil. Soc.* vol. xvii. no. 100, pp. 233–247, pls. 6–15 (numbered 1–9).

Repeats the description of *Camarasaurus* (n. gen. 1877) *supremus* from *Palæontological Bulletin*, no 25, and of *Amphicœlias* (n. gen. 1877) *latus*, *Ibid.* no. 27 (see *post*, in SUPPLEMENT), with additional measurements. Describes the new species *Symphyrophus* (? n. gen.) *musculosus* and *Caulodon leptoganus*. W. H. D.

——. Description of Extinct Batrachia and Reptilia from the Permian formation of Texas. *Proc. Amer. Phil. Soc.* vol. xvii. no. 101, pp. 505–530. (*Pal. Bull.* no. 29.)

Describes the following new species, all of new genera except *Clepsydrops* and *Ctenodus*.

REPTILIA.

Diadectes sideropelicus, D. latibuccatus.
Bolosaurus striatus, B. rapidens.
Pariotichus brachyops.
Ectocynodon ordinatus.
Clepsydrops natalis.
Dimetrodon incisivus, D. rectiformis, and D. gigas.

Epicordylus erythroliticus.
Metarmosaurus fossatus.
Embedocles alatus. Empedocles/
Embolophorus fritillus.
Theropleura retroversa, T. uniformis, and T. triangulata.

BATRACHIA.

Parioxys ferricolus.
Zatrachys serratus.

Trimerorhachis insignis.
Rhachitomus valens.

FISH.

Ctenodus periprion, C. porrectus, C. dialophus.

W. H. D.

——. Contribution to the Vertebrate Fauna of the Miocene of Oregon. (*Pal. Bull.* no. 30.) Pp. 16. 8vo. *Philadelphia*.

Describes the new species:—

Steneofiber gradatus.
Endoptychus (n. gen. Rodentia) cavifrons, E. planifrons, E. crassiramis.
Pleurolicus (n. gen. Rodentia) sulcifrons.
Meniscomys (n. gen. Rodentia) hypodus, M. multiplicatus.
Temnocyon (n. gen. Carnivora) altigenis.
Canis cuspigerus, C. geismarianus.

Machærodus strigidens, M. brachyops.
Anchitherium equiceps, A. brachylophum, A. longicristus. i/.
Stylonus (n. gen. Perissodactyla) seversus.
Dæodon (n. gen. Perissodactyla) shoshonensis.
Hyopotamus guyotianus.

[In 1879, *Hyopotamus guyotianus* is transferred to *Merycopater*, n. gen., and *Machærodus brachyops* to *Hoplophoneus*.] W. H. D.

✱ hippodus

Cope, Prof. E. D. On the Saurians recently discovered in the Dakota Beds of Colorado. *Amer. Nat.* vol. xii. pp. 71–85, figs. 1–16.

Gives a general account of these Saurians, with descriptions and figures of *Camarasaurus* and *Amphicœlias*.

——. On a new Opisthocœlous Dinosaur. *Amer. Nat.* vol. xii. p. 406; reprinted in *Annals*, ser. 5, vol. ii. p. 194.

The remains of a new Dinosaur allied to *Camarasaurus* and *Streptospondylus*, obtained from the Dakota Beds of Canyon city, Colorado, are described and named *Epanterias amplexus*. E. T. N.

——. Prof. Marsh on Permian Reptiles. *Amer. Nat.* vol. xii. pp. 406–408.

Claims priority for some details noted by Marsh.

——. A new Species of *Amphicœlias*. *Amer. Nat.* vol. xii. pp. 563, 564.

Describes *A. fragillimus*, from Dakota Beds, Colorado.

——. A new *Diadectes*. *Amer. Nat.* vol. xii. p. 565.

D. molaris is described from the Permian of Texas.

——. The Vertebræ of *Rhachitomus*. *Amer. Nat.* vol. xii. p. 633.

Further details.

——. The Theromorphous Reptilia. *Amer. Nat.* vol. xii. pp. 829, 830. (Abstract of paper read to *Nat. Ac. Sci.*)

Founds the order *Theromorpha* and the sub-orders *Pelycosauria* and *Anomodontia*. Describes *Dimetrodon cruciger*, n. sp.

——. On the Classification of the Extinct Fishes of the Lower Types. *Proc. Amer. Assoc.* vol. xxvi. pp. 292–300.

Discusses the Actinopterous families, and founds the new order *Actinochiri*, with the single family *Pelecopteridæ* and the genera *Pelecopterus* and *Erisichthe*. W. H. D.

——. American Fossils. An Account of some of Professor Cope's important Discoveries in Palæontology. P. 1. Fol. *Philadelphia.*

Cornuel, J. Description de débris de Poissons fossiles provenant principalement du calcaire néocomien du département de la Haute-Marne. [Remains of Fossil Fishes principally from the Neocomian Limestone of Haute-Marne.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 604–626, pl. xi.

The following new species are figured and described:—*Lepidotus longidens*, *Pycnodus profusidens*, *P. varians*, *P. sculptus*, *P. imitator*, all from the Spatangus Limestone of Wassy; *P. heterotypus*, from the blue marly limestone at the base of the Spatangus Bed at Vallerest; *P.*

disparilis, *P. quadratifer*, *P. mantelli*, all from the Wassy Spatangus Bed; *Ellipsodus* (n. gen.) *incisus* from the oolite iron-ore of Wassy (U. Neocomian); *Egertonia gaultina* from the U. Gault of Moutier-en-Der.
G. A. L.

Crane, Agnes. On certain Genera of living Fish and their fossil affinities. 24 *Ann. Rep. Brighton Nat. Hist. Soc.* pp. 44–60.

Davies, W. On the Nomenclature of *Saurocephalus lanciformis* of the British Cretaceous Deposits; with Description of a new Species (*S. Woodwardi*). *Geol. Mag.* dec. ii. vol. v. pp. 254–261, plate; Erratum on p. 335.

The British fossils hitherto assigned to *Saurocephalus* are referred to 4 genera, as follows—*Erisichthe Dixoni*, *Saurocephalus lanciformis*, *Protosphyræna ferox*, *Xiphias Dixoni*. The new species is from the U. Cretaceous of Maestricht. L. C. M.

Dawkins, Prof. W. B. Contributions to the History of the Deer of the European Miocene and Pliocene Strata. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 402–420; 17 woodcuts.

The antlers of 10 species are compared and classified. Two sections, Capreoli and Axeidæ, are proposed; *Cervus suttonensis* (Red and Norwich Crag), *C. cylindroceros* (U. Pliocene of Auvergne), and *C. tetraceros* (Pliocene of Peyrolles) are new species. A progressive complexity is traced from the Miocene Cervine antlers, which consist of simple forked crowns, to the Pliocene, which are the most complicated forms known. The Capreoline type is older than any other. There is no evidence that L. Miocene deer had antlers. L. C. M.

——. The British Pleistocene Mammalia. Part A. A preliminary treatise on the Relation of the Pleistocene Mammalia to those now living in Europe. *Pal. Soc.* pp. i–xxxviii.

The wild and domestic animals living in Great Britain, Ireland, and the continent of Europe during historic times are discussed and tabulated. The reindeer ranged further south than at present; the lion, panther, and urus are the only three mammals exterminated in Europe in historic times. The urus breed was introduced into Britain by the English. The fallow-deer marks the influence of the Roman power, and the domestic cat intercourse with the S. and E. of Europe. L. C. M.

Delfortrie, E. Etude sur le genre *Notidanus*. *Notidanus Thevenardi*. [The Genus *Notidanus*. *N. Thevenardi*.] *Act. Soc. Linn. Bordeaux*, vol. xxxii. pp. 253–256.

Describes and gives a woodcut figure of this new sp. from the U. Miocene of St. Médan.

Deslongchamps, E. E. Le Jura Normand. Etudes Paléontologiques, Livr. 2, Monog. iv. pp. 37–60, pls. iii., vii., xv.

Continues the detailed description of *Pelagosaurus typus*, Bronn. See Geological Record for 1877, p. 283.

Dewalque, J. [Notice of a large Ichthyodorulite from the Carboniferous Limestone.] *Ann. Soc. Géol. Belg.* t. v. pp. lix, lx.

Proposes to name it *Antacanthus insignis* (n. gen. and sp.).

Dupont, Ed. Sur la découverte d'ossements d'Iguanodon, de poissons, et de végétaux dans la fosse Sainte-Barbe du charbonnage de Bernissart. [Discovery of Iguanodon, Fish, and Vegetable Remains in the St. Barbe Pit of the Bernissart Colliery.] *Bull. Ac. R. Belg.* sér. 2, t. xlvi. pp. 387–408.

The remains described in this preliminary notice are:—*Iguanodon*, six skeletons; *Chelonians*, remains of two small individuals belonging to the genera *Emys* and *Trionyx*; *Fishes*, about 100 specimens; *Insects*, larvæ etc.; *Plants*, a number of Wealden forms. The whole deposit, filling up a fissure in the Coal Measures, is proved to be Aachenian (= Wealden). [See **Van Beneden**, p. 48.] G. A. L.

Egerton, Sir P. de M. G. On some Remains of Ganoid Fishes from the Deccan. *Palæontologia Indica*, ser. iv. no. 2.

The fossils are derived from the Kota-Maledi (U. Gondwana) deposits of the Godávari valley. They include 5 sp. of *Lepidotus*, of which *L. pachylepis* and *L. calcaratus* are new, 3 new sp. of *Tetragonolepis*, *T. Oldhami*, *T. analis*, and *T. rugosus*, besides *Dapedius Egertoni*. The genus *Æchmodus* is withdrawn. L. C. M.

Filhol, H. Note relative à la découverte d'un crâne d'*Ursus priscus* dans la Caverne de Lherm (Ariége). [Skull of *U. priscus* from a Cave in Ariége.] *Bull. Soc. Philomath. Paris*, sér. 7, t. ii. no. 1, pp. 19–25.

U. priscus is allied to the Brown Bear of the Pyrenees, *U. spelæus* to the Grizzly Bear. The distinguishing characteristics of each are given; and the skull of the first is minutely described. G. B.

Forsyth-Major, Dr. C. T. Considerazioni sulla Fauna dei Mammiferi pliocenici e post-pliocenici della Toscana. [Pliocene and Post-Pliocene Mammals of Tuscany. (Pt. 3.)] *Atti Soc. Tosc. Sci. Nat.* vol. iii. pp. 207–227, pls. xii.–xiv. Parts 1 and 2 are noticed in the Geological Record for 1875, p. 279, and for 1876, p. 255.

Deals with fossil Canidæ of the upper Arno and Era valleys, describing portions of jaws of *Canis Etruscus* and *C. Falconeri*, both new. Plate xii. illustrates part 2 (teeth of Cervidæ and *Hipparion*). W. H. D.

Fraas, Oscar. Ueber *Pterodactylus suevicus*, Qu., von Nusplingen. *Palæontographica*, Bd. xxv. pp. 161–174, plate.

The specimen obtained in Nusplingen has been developed, and is described in detail. It belongs to the species *Pterodactylus suevicus*, Quenstedt. E. T. N.

Fritsch, Dr. Anton. Die Reptilien und Fische der böhmischen Kreideformation. [Reptiles and Fishes from the Chalk of Bohemia.] Pp. 46; 10 pls. Fol. *Prague.*

The reptiles are few and fragmentary. They include a tibia (?) of *Iguanodon* (?) *Exogirarum*, n. sp. Among the fish-remains are a number of sharks' teeth and vertebræ, a palatal tooth of *Chimæra furcata*, n. sp., and a coprolite (?) named *Lepidenteron longissimum*. *Dercetis Reussii*, *Macropoma forte*, *Halec Laubei*, and *Alosa bohemica* (a genus hitherto known only by tertiary fossils) are the other new species, all represented by skulls, some unusually complete. The structure of several well-known genera of Cretaceous fishes, especially of *Macropoma*, *Beryx*, *Osmeroides*, *Enchodus*, and *Halec*, receives further illustration. L. C. M.

Gaudry, Albert. Sur les enchaînements des Mammifères tertiaires. [Mutual Relations of Tertiary Mammals.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 151–154.

Résumé of the work noticed in the GEOLOGICAL RECORD for 1877, p. 285.

——. Sur un grand Reptile fossile (l'*Eurysaurus Raincourti*). *Compt. Rend.* t. lxxxvi. pp. 1031–1033.

Describes *Eurysaurus Raincourti*, n. gen. and sp., from the Inf. Oolite of Echenoz. It is believed to show a greater affinity with *Plesiosaurus* than with any other form. E. T. N.

——. Sur les Reptiles des temps primaires. [Reptiles of the Primary Epoch.] *Compt. Rend.* t. lxxxvii. pp. 956–958.

Notices certain peculiarities in a vertebra of *Actinodon*, also observed in *Archægosaurus*. Describes *Pleuronoura Pellati* and *Euchyrosaurus Rochei* (both n. gen. and sp.) from the Permian of Autun and Igornay respectively. E. T. N.

Gervais, Prof. P. Nouvelles recherches sur les Mammifères fossiles propres à l'Amérique méridionale. [S. American Fossil Mammals.] *Compt. Rend.* t. lxxxvi. p. 1359. Translated in *Annals*, ser. 5, vol. ii. pp. 271, 272.

Notes on bones from the province of Minas, in Brazil, and from the Argentine Republic. New details are given regarding *Toxodon*. A large *Machairodus*, *M. necator*, n. sp., is recorded, of which nearly an entire skeleton has been obtained. The name *Glyptodon rudis* is given to a new form, which, it is thought, will constitute a new genus. Another new species, allied to *Hoplophorus*, is named *H. discifer*. Specimens of human workmanship have also been found, which may possibly date back to the age of the great mammals. E. T. N.

Gervais, Prof. P. Sur la dentition des Smilodons. [Dentition of Smilodons.] *Compt. Rend.* t. lxxxvii. p. 582.

In the *Machairodus* the dentition conforms to the Feline type, 3 molars above and 3 below; in the Smilodons there are only 2 molars in the lower jaw. E. T. N.

Giebel, Dr. —. Ueber das Gehirn des diluvialen Nashornes. [Brain of Diluvial Rhinoceros.] *Zeitschr. ges. Nat.* Folg. 3, Bd. iii. pp. 370–373, pl. 14.

Glanville, B. J. The Fossil Anomodontia of South Africa. *Geol. Mag.* dec. ii. vol. v. p. 573.

Procolophodon has two distinct nares, as pointed out by Prof. Seeley. Its geological position is higher than that of *Dicynodon.*

Harting, J. E. The Extinct British Wolf. *Pop. Sci. Rev.* n. s. vol. ii. pp. 53-61, 141–154, 251-266, 396–406.

The wolf has been found in Pleistocene deposits in 12 English counties. Mainly concerned with the historical evidence and theory that the wolf existed in England down to the time of Henry 7; in Scotland till 1743; in Ireland till 1770. W. T.

Hasse, C. Anatomische und paläontologische Ergebnisse. Pp. 22, 2 pls. 4to. *Leipzig.*

Remarks on the primary and secondary vertebræ of extinct reptiles, and the relationship between sharks and rays.

——. Die fossile Wirbel: Cestracionten. *Morphol. Jahrb.* Bd. iv. pp. 213–268, pls. 12–14.

Hoernes, R. Die fossilen Säugethierfaunen der Steiermark. [Fossil Mammalia of Styria.] *Mitth. nat. Ver. Steiermark* for 1877.

Hulke, J. W. Note on two Skulls from the Wealden and Purbeck Formations indicating a new Subgroup of Crocodilia. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 377–382, pl. xv.

1. A skull from the Wealden, referred to *Goniopholis crassidens.* 2. A skull in the British Museum, since figured by Prof. Owen as *G. simus.* The genus seems to be intermediate between Huxley's Eusuchia and Mesosuchia, and the author proposes to place it in a new subgroup, Metamesosuchia. L. C. M.

——. Note on an Os articulare, presumably that of *Iguanodon Mantelli.* *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 744–747; 4 woodcuts.

Five specimens from the Wealden of Brooke, I. of Wight.

Hutton, F. W. On the Number of Cervical Vertebræ in *Dinornis.* *Annals*, ser. 5, vol. i. pp. 407–409.

The number is 20 or 21.

Hutton, F. W. Note on the Number of Cervical Vertebræ in *Dinornis robustus*. *Annals*, ser. 5, vol. ii. p. 494.

The long-legged species of Moa had the same number of vertebræ as the short-legged species, the cervicals in both being 20 or 21.

Huxley, T. H. The History of Birds. *Proc. R. Inst.* vol. viii. pp. 347, 348. Wrongly entered in the GEOLOGICAL RECORD for 1877, p. 288.

Issel, A. Di alcuni fiere fossili del Finalese. [On some Fossil Mammals of the Finalese.] *Rome.*

Koninck, Prof. L. G. de. Faune du Calcaire Carbonifère de la Belgique.—Pt. I. Poissons et genre Nautile. [Carboniferous Limestone Fauna of Belgium.—Pt. I. Fish and Nautilus.] *Ann. Mus. R. Hist. Nat. Belg.* t. ii. pp. 152; 31 pls. in folio atlas. See INVERTEBRATA, *post.*

The new fishes described are:—*Gonatodus? Toilliezi*, *Benedenius*, n. g. (Traquair), with descriptions by **Dr. R. H. Traquair**, *Platysomus? insignis*, *Petrodus Ryckholti*, *Helodus? curvatus*, *Serratodus* (n. gen.) *elegans*, *Streblodus tenerrimus*, *Cochliodus tenuis*, *Pœcilodus elegans*, *Tomodus Craigi*, *T. laciniatus*, *Sandalodus robustus*, *Deltodus sandalinus*, *Xystrodus alatus*, *Ctenacanthus maximus*, *Stichacanthus* (n. gen.) *Cœmansi*. R. E., Jun.

Lawley, Robert. Confronto di una Mascella di *Carcharodon Lamia*, Rond., coi denti *Carcharodon* fossili trovati nelle Colline Toscane. [Comparison of a Jaw of *Carcharodon* with Fossil Teeth found in Tuscany.] *Atti Soc. Tosc. Sci. Nat.* vol. iii. pp. 330–336.

——. Resti di un *Oxyrhina* rinvenuta allo Case Bianche presso alle Saline di Volterra. [Fossil *Oxyrhina*, Volterra.] *Atti Soc. Tosc. Sci. Nat.* vol. iii. pp. 337–340.

Gives the name *Oxyrhina Agassizii* to this new species.

——. Resti di *Felsinoterium Forestii*, Cap., trovati presso Volterra. [*Felsinotherium Forestii*, Volterra.] *Atti Soc. Tosc. Sci. Nat.* vol. iii. pp. 341, 342.

——. Confronto di Denti Fossili che si trovano nelle Colline Toscane con la Dentizione dell' *Oxyrhina Spallanzanii*, Bonp., vivente nel Mediterraneo. [Comparison of Tuscan Fossil Teeth with those of a living *Oxyrhina*.] *Atti Soc. Tosc. Sci. Nat.* vol. iii. pp. 343–349.

——. Resti fossili della Selache trovati a Ricava presso Santa Luce. [Fossil Selachians near Sta. Luce.] *Proc.-verb. Soc. Tosc. Sci. Nat.* p. xxii.

Lemoine, Victor. Recherches sur les Oiseaux Fossiles des Terrains Tertiaires Inférieurs des Environs de Reims. (L. Tertiary Birds, Rheims.] Pp. 69; 4 pls. 8vo. *Rheims.*

Lemoine, Dr. Victor. Communication sur les Ossements Fossiles des Terrains Tertiaires inférieurs des Environs de Reims. [L. Tertiary Fossil Bones of Rheims District.] Pp. 24; 5 pls. 8vo. *Rheims.*

Liebe, K. Th. Das diluviale Murmelthier Ost-Thüringens und seine Beziehungen zum Bobak und zur Marmotte. [Diluvial Marmot of E. Thuringia, and its Relations to the Bobak and to the Marmot proper.] *Zool. Garten*, Jahrg. 19, Heft ii.

Describes the remains of a marmot-like animal found in Drift at Gera. It is allied by certain characters to the Siberian (Bobak), and by others to the Alpine marmot. Steppe-like conditions at the time of the Drift are inferred. G. A. L.

Lydekker, R. Crania of Ruminants from the Tertiary Formations of India. *Palæontologia Indica*, ser. x. no. 3, pp. 1–84, pls. i.–xviii.

Describes the following genera and species:—

Bos namadicus.
B. planifrons, n. sp.
B. acutifrons, n. sp.
B. platyrhinus, n. sp.
Bison sivalensis.
Bubalus platyceros, n. sp.
B. palæindicus.'
Peribos occipitalis.
Hemibos triquetriceros.
Amphibos acuticornis.
Antilope sivalensis.
A. patulicornis, n. sp.
A. porrecticornis, n. sp.
Hydaspitherium megacephalum, n. gen. and sp.
Capra sivalensis, n. sp.
C. perimensis, n. sp.

E. T. N.

——. Notices of Siwalik Mammals. *Rec. Geol. Surv. Ind.* vol. xi. pp. 64–104.

A detailed description of specimens from the Siwalik series of Sind and the Punjab. The mammaliferous beds of Sind belong to a somewhat lower stage than that which yields the majority of fossils in other areas. The Sind beds may be at the top of the Miocene, the Punjab beds Older Pliocene. The specimens described belong to the following genera:—

Macacus.
Mastodon.
Stegodon.
Dinotherium.
Hyotherium.
Anthracotherium.
Rhagatherium.
Chœromeryx.
Merycopotamus.
Sus.
Hippohyus.
Camelopardis.
Hydaspitherium.
Rhinoceros.
Listriodon.
Hystrix.
Rhizomys.
Felis.
Hyæna.
Mellivora.
Meles (?).
Amphicyon.
Hyænarctos.

F. D.

Marsh, Prof. O. C. New Species of *Ceratodus* from the Jurassic. *Amer. Journ.* ser. 3, vol. xv. p. 76. Reprinted in *Annals*, ser. 5, vol. i. p. 184.

C. Güntheri from Colorado is described and figured.

——. Notice of New Dinosaurian Reptiles. *Amer. Journ.* ser. 3, vol. xv. pp. 241–244.

Describes from the *Atlantosaurus*-beds of the Rocky Mountains the new species *Atlantosaurus immanis*, *Morosaurus* (n. gen.) *impar*, *Allosaurus* [changed in 1879 to *Labrosaurus*] *lucaris*, *Creosaurus* (n. gen.) *atrox*, *Laosaurus* (n. gen.) *celer*, and *L. gracilis*. The ilium of *Creosaurus* is figured. W. H. D.

Marsh, Prof. O. C. Notice of New Fossil Reptiles. *Amer. Journ.* ser. 3, vol. xv. pp. 409–411.

Describes from U. Permian ? of New Mexico *Nothodon lentus*, *Sphenacodon ferox*, *Ophiacodon merus*, and *O. grandis*. Genera and species all new. W. H. D.

——. Fossil Mammal from the Jurassic of the Rocky Mountains. *Amer. Journ.* ser. 3, vol. xv. p. 459. [Reprinted in *Annals*, ser. 5, vol. ii. p. 108.]

Describes the right lower jaw of *Dryolestes priscus*, n. gen. and sp., a marsupial of the size of a weasel, from the *Atlantosaurus*-beds (U. Jurassic). W. H. D.

——. New Pterodactyl from the Jurassic of the Rocky Mountains. *Amer. Journ.* ser. 3, vol. xvi. pp. 233, 234.

Describes part of metacarpal of *Pterodactylus montanus* from the *Atlantosaurus*-beds of Wyoming.

——. Principal Characters of American Jurassic Dinosaurs. Part I. *Amer. Journ.* ser. 3, vol. xvi. pp. 411–416, pls. iv.–x.

Two sub-orders of herbivorous Dinosaurs from the *Atlantosaurus*-beds (Cretaceous of Hayden and Cope, Jurassic of Marsh) are described:—1. SAUROPODA: *Atlantosaurus* = *Titanosaurus*, *Apatosaurus*, *Morosaurus*, and *Diplodocus*, n. gen. The group is illustrated mainly by a description of *Morosaurus*. *Diplodocus longus* (n. sp.) is based on a hind limb and tail from the U. Jurassic, Colorado. 2. [UNNAMED]: *Laosaurus*, most nearly resembling *Hypsilophodon*. L. C. M.

Mason, W. D. H. [Batrachian Foot-tracks from Ellen Gowan Shaft, Schuylkill County.] *Proc. Amer. Phil. Soc.* vol. xvii. no. 101, pp. 716–719.

Miall, Prof. L. C. Monograph of the Sirenoid and Crossopterygian Ganoids. Part I. Pp. 1–32, pl. vi. *Pal. Soc.*

Introduction: *Lepidosiren*, *Protopterus*, and *Ceratodus*. *Ceratodus polymorphus*, n. sp., is proposed to include many of the variable teeth found at Aust Cliff (Rhætic). L. C. M.

——. On the Genus *Ceratodus*, with special reference to the Fossil Teeth found at Maledi, Central India. *Palæontologia Indica*, ser. iv. no. 2, pp. 9–17, plate.

A rule for distinguishing the palatal from the mandibular teeth of *Ceratodus* is given. The Indian species are discussed.

Newberry, Prof. J. S. Fossil Fishes from the Trias of New Jersey and Connecticut. *Ann. N. York Ac. Sci.* vol. i. no. 4.

Describes *Diplurus longicaudatus* and *Ptycholepis Marshii*, n. sp., from New Jersey and Connecticut.

——. Descriptions of new Palæozoic Fishes. *Ann. N. York Ac. Sci.* vol. i. pp. 188–192.

Describes the new species *Diplognathus* (n. gen.) *mirabilis*, from the Huron Shale, Sheffield, Loraine Co., Ohio; *Glyptopomus Sayrei*, Catskill group, Wyoming Co., Penn.; *Archæobatis* (n. gen.) *gigas*, from the St. Louis beds, Greencastle, Indiana; *Dinichthys minor* and *Ctenacanthus compressus*, Hurón Shale, Ohio; *Rhynchodus occidentalis*, Hamilton Limestone, Waverley, Iowa. R. B. N.

Newton, E. T. Notes on a Crocodilian Jaw from the Corallian Rocks of Weymouth. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 398–400, pl. xvi.

Part of mandible, with teeth. About two inches of the upper surface of the symphysis are defined by deep grooves, and form a peculiar lenticular area not found in other genera. L. C. M.

——. Description of a New Fish from the Lower Chalk of Dover. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 439–446, pl. xix.

The genus, which differs from *Ichthyodectes* chiefly in the compressed and knife-edged teeth, is new to England. The new species *Daptinus intermedius* is represented by a well-preserved skull and five vertebræ. A maxilla, also from the L. Chalk of Dover, may belong to another species of the genus. L. C. M.

——. Remarks on *Saurocephalus*, and on the Species which have been referred to that Genus. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 786–796.

——. The Chimæroid Fishes of the British Cretaceous Rocks. *Geol. Survey Memoirs*, Monograph iv. pp. vii, 50; 12 pls. 8vo. *London.*

General introduction and table of generic characters. 14 species are described, the following being new—*Edaphodon Reedii*, *E. crassus*, *E. laminosus*, *Ischyodus latus*, *I. planus*, *I. incisus*, and *Elasmognathus Willettii* (n. gen.). Gives a table of distribution and a bibliography. E. T. N.

Nicholson, Prof. H. A. Recent Progress in Palæontology. *Geol. Mag.* dec. ii. vol. v. pp. 1–13.

Refers to the occurrence of Permian fish with Carboniferous plants, and to the plants of the American lignite series, to fossil sponges and corals. Among vertebrates, the Dipnoi, Labyrinthodonts, Odontornithes, and Ungulates are specially noticed.

Noulet, J. B. Sur l'*Anthracotherium hippoideum* découvert à Armissan (Aude). [*A. hippoideum* from Armissan.] *Mém. Ac. Toulouse*, sér. 7, t. x. p. 52.

Osborne, H. F., W. B. Scott, and **F. Speir, Jun.** Palæontological Report of the Princeton Scientific Expedition of 1877. *Contrib. Mus. Geol. Princeton Coll.* no. 1, pp. 146, 10 pls.

Results of an expedition to the Bridger Basin of Wyoming and to

South Park, Colorado. After an introductory note upon the geology of the Bridger basin, describes the osteology and dentition of many Eocene vertebrates, including the following new species, from the Wyoming Eocene:—*Megencephalon* (n. gen. Carnivora) *primævus* (cranial cast), *Leurocephalus* (n. gen. Perissodactyla) *cultridens*, *Hyrachyus imperialis*, *H. intermedius*, *H. crassidens*, *Helaletes latidens*, *Ithygrammodon* (n. gen. Artiodactyla) *cameloides*, *Uintatherium Leidyianum*, *U. princeps*, and *Crocodilus parvus*; and from Miocene insect-beds, Florissant, Col., *Trichophanes Copei*. Gives a systematic catalogue of the Eocene vertebrates of Wyoming, with bibliography of each species. W. H. D.

Owen, Prof. Richard. On *Argillornis longipennis*, Ow., a large Bird of Flight, from the Eocene Clay of Sheppey. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 124–130, pl. vi.

Founds this new genus and species on portions of humeri, including the articular head. The remains are compared with others from the London Clay, and with the recent albatross, to which the affinity of *Argillornis* seems to be nearest. L. C. M.

——. On the Influence of the Advent of a Higher Form of Life in Modifying the Structure of an Older and Lower Form. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 421–430; 6 woodcuts.

The following characters are associated in the more characteristic Mesozoic Crocodiles:—Amphicœlous vertebræ, strong and extensive armour, palato-nares anterior in position, upper temporal apertures larger than orbits, fore legs relatively short. In Neozoic Crocodiles, as a rule, the vertebræ are procœlous, the armour reduced in strength and extent, the palato-nares placed far back, the upper temporal apertures smaller than the orbits, the fore legs relatively longer and stronger. The Mesozoic Crocodiles are adapted by these peculiarities of structure to a wholly aquatic and probably marine life, while the food probably consisted of fish or other cold-blooded aquatic animals. The differences presented by the modern group are referred to the incoming of terrestrial quadrupeds. Modern crocodiles prey upon these, and visit the shore in order to do so. The backward position of the palato-nares is related to the valvular mechanism which enables the crocodile to hold a large quadruped submerged without admitting water to the glottis. Among secondary crocodiles *Goniopholis* approaches the existing species, as *Gavialis* among the existing species approaches the secondary forms. L. C. M.

——. On the Affinities of the Mosasauridæ, Gervais, as exemplified in the Bony Structure of the Fore Fin. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 748–753; 4 woodcuts.

The fin of *Lestosaurus simus* as restored by Marsh is Lacertian rather than Plesiosaurian or Cetacean. A short note on a statement by Prof. Cope as to the presence of a zygosphene in the vertebra of *Clidastes* is appended (see **Cope**, second entry, p. 291). L. C. M.

Owen, Prof. R. Monograph on the Fossil Reptilia of the Wealden and Purbeck Formations. Supp. No. 8. Crocodilia (*Goniopholis*, *Petrosuchus*, and *Suchosaurus*). *Pal. Soc.* pp. 1–15, pls. i.–vi.

Goniopholis crassidens and *G. simus* are more fully described. The teeth and vertebræ provisionally associated under the species *Suchosaurus cultridens* are re-described. *Petrosuchus levidens*, founded upon a skull and mandible with teeth, from the Middle Purbeck of Swanage, is new. L. C. M.

——. On *Dinornis* (Part XXI.): containing a Restoration of the Skeleton of *Dinornis maximus*, Ow., with an Appendix on Additional Evidence of the Genus *Dromornis* in Australia. *Trans. Zool. Soc.* vol. x. p. 147; 3 plates and numerous woodcuts.

From new specimens of *Dinornis maximus* a summary of the osteology is given, details of the vertebræ being compared with those of the *Struthio camelus*. The sternum is described, and compared with that of other fossil species, and the skull is described. Certain of the remains of these gigantic birds are regarded as Recent, and others as Post-pliocene; but all the species are thought to have existed when the present race of Maoris set foot on New Zealand. E. T. N.

——. On the Fossils called "Granicones;" being a Contribution to the Histology of the Exo-skeleton in Reptilia. *Journ. R. Micr. Soc.* vol. i. pp. 233–236, pls. xii., xiii.

Certain slabs of M. Purbeck contain small conical bodies with comparatively smooth base, while the rest of the surface, although of a denser and smoother texture, is beset with granules of a millimetre diameter. These bodies are called granicones; and the character of their osteodentine and ganoin, shown in microscopic sections, is compared with that of the dermal appendages of certain fish and reptiles. They are attributed to the Lacertian *Nuthetes destructor*, elsewhere described from these beds. Among existing lizards the dermal armour of the Australian *Moloch horridus* most resembles the bodies in question, although in this there is no trace of ossification. E. T. N.

——. On the Solitaire (*Didus solitarius*, Gm.; *Pezophaps solitaria*, Strickl.). *Annals*, ser. 5, vol. i. pp. 87–98, pls. vii., viii.

Bones from Rodriguez complete the skeleton. These are described in detail, and compared with the nearly-allied forms *Didunculus*, *Didus*, and *Treron*. The wings are reduced by disuse. That classification which groups together the flightless birds with keelless breastbones is artificial; for extinct forms, showing the true affinities of these birds, suggest that the existing wingless genera will ultimately be referred to many distinct natural groups, formerly or now represented by flying birds. E. T. N.

——. On the Occurrence in North America of rare Extinct Vertebrates found fragmentarily in England. *Annals*, ser. 5, vol. ii. pp. 201–223, pls. x., xi.

Part I. Restoration of *Chondrosteosaurus*. *Camarosaurus*, Cope, from Secondary beds of Colorado, appears to belong to *Chondrosteosaurus*. Their vertebral characters are compared; the affinities of the genus are discussed; and it is inferred that *Chondrosteosaurus* was more aquatic than were *Iguanodon* or *Megalosaurus*. The age of the American beds is probably, from the resemblance of the *Chondrosteosaurus* and *Camarosaurus*, Wealden.—Part II. Restoration of *Coryphodon*. Its affinities are pointed out, and the subsequent simplification of the foot in Perissodactyla is traced through various other genera. Remarks are made upon the probable cause of the small size of the brain.
E. T. N.

Philippi, Dr. R. A. *Carcharodon gigas*, eine neue Art aus der Tertiärformation Chile's. [New Shark from Chilian Tertiaries.] *Zeitschr. ges. Nat.* Folg. 3, Bd. iii. pp. 685, 686, pl. xix.

Very near *C. megalodon*, but probably distinct.

Portis, Alessandro. Ueber fossile Schildkröten aus dem Kimmeridge von Hannover. [Chelonia from Kimmeridgian of Hanover.] *Palæontographica*, Bd. xxv. pp. 125–142; 4 pls.

Describes five species, of which *Plesiochelys minor* and *Chelonides robusta* are new. *Stylemys Lindensis*, Maack, 1870, is renamed *Tropidemys Seebachi*.
W. H. D.

——. Ueber die Osteologie von *Rhinoceros Merckii*, Jäg., und über die diluviale Säugethierfauna von Taubach bei Weimar. [Osteology of *Rhinoceros Merckii* and Drift Mammals of Weimar.] *Palæontographica*, Bd. xxv. pp. 143–160, pls. 19–21.

In digging for sand and limestone at Taubach, in Thuringia, remains of Rhinoceros and a number of other mammals were found. These are described; but the description of the Rhinoceros occupies the greater part of the paper.
E. T. N.

Probst, —. Beiträge zur Kenntniss der fossilen Fische aus der Molasse von Baltringen. *Jahres. Ver. Nat. Württ.* Bd. xxxiv. pp. 113–154, plate.

Describes a large number of species, of which the following are new:—

Scoliodon Kraussi.
Aprion stellatus, A. brevis.
Hypoprion singularis.
Prionodon similis, P. speciosus, P. deformis, P. modestus, P. angustidens, P. armatus, P. tumidus, P. Baltringensis.
Galeus affinis, G. tenuis, G. cristatus.
Hemipristis Klunzingeri.
Sphyrna integra, S. lævis.

E. T. N.

Reinhardt, J. Kæmpedovendyr-Slægten *Cœlodon*. [The Giant-Sloth *Cœlodon*.] *K. Danske Vid. Selsk. Skr.* Bd. xii. h. 3, pp. 257–334, 5 plates. Résumé in French, pp. 335–349.

Description of bones found in Brazilian bone-caverns, by **Dr. P. W. Lund**.—I. Historical notes. II. Osteology (skull, teeth, vertebral column, ribs, fore and hind limbs) described and figured. III. Remarks.
E. E.

Rolleston, Prof. George. Description of the Human and other Bones from the Peat of Newbury, in the Oxford University Museum. *Trans. Newbury Field Club*, vol. ii. pp. 241–245.

Refers to two human skulls, and to remains of boar, roe, and red-deer. Gives measurements of the skulls.

Rütimeyer, L. Die Rinder der Tertiär-Epoche, nebst Vorstudien zu einer natürlichen Geschichte der Antilopen. Zweiter Theil. [Tertiary Ruminants. Part 2.] *Abh. schweiz. pal. Ges.* Bd. v. pp. 73–208; 7 pls.

Includes descriptions of the following groups:—5. Strepsiceros-group. *Tragelaphus*, *Strepsiceros*, *Orcas*, with concluding remarks upon the Antilopes. Caprina: *Hemitragus*, *Kemas*, *Ægoceros Pallasii*, *Ammotragus*, *Budorcas*, *Ovibos*. Fossil Caprina: *Bucapra Daviesii.* Bovina: Fossil Bovidæ. **A.** Bubalina: *Probubalus triquetricornis*, *P. antelopinus*, *Bubalus sivalensis*, *B. palæindicus*, *B. Pallasii*, *B. antiquus*, *Amphibos acuticornis.* **B.** Bibovina: *Bos palæogaurus*, *B. etruscus.* **C.** Portacina: *Leptobos Falconeri*, *L. Frazeri*, *L. Strozzii.* **D.** Taurina: *Bos namadicus.* An appendix, and some remarks on the geographical distribution. E. T. N.

Sanson, A. Détermination spécifique des ossements fossiles ou anciens des Bovidés. [Fossil Bovidæ.] *Compt. Rend.* t. lxxxvii. pp. 756–759.

The Aurochs of Cuvier, *B. urus*, *B. priscus*, *B. latifrons*, and *B. antiquus* are the same as the *B. americanus* and *B. europæus*, all being varieties of one and the same species. *Bos primigenius*, considered extinct, is said to be now represented by the author's *Bos taurus liguriensis*; *Bos trachoceras* and *B. frontosus* by *B. taurus jurassicus*; *B. longifrons* by *B. taurus batavicus*; and *B. brachycerus* by *B. taurus alpinus*, to which also *B. brachycephalus* is most nearly allied.

E. T. N.

Sauvage, Dr. H. E. Sur les *Lepidotus* et *Sphærodus gigas.* [*Lepidotus* and *Sphærodus gigas.*] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 626–629.

The synonymy of *Lepidotus maximus* is:—*Sphærodus gigas*, Agassiz, Quenstedt, Wagner, Thurmann, etc.; *S. crassus*, Wagner; *S. gigantiformis*, Schaurath; *Lepidotus giganteus*, Quenstedt, Sauvage; *L. maximus*, Wagner. G. A. L.

Seeley, Prof. H. G. On new Species of *Procolophodon* from the Cape Colony preserved in Dr. Grierson's Museum, Thornhill, Dumfriesshire; with some Remarks on the Affinities of the Genus. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 797–807, pl. xxxii.

Descriptions of the skulls of three new Triassic species, *P. Griersoni*, *P. cuniceps*, and *P. laticeps.* The definition of Prof. Owen's order Theriodonta is criticised. *Procolophodon* is regarded as belonging to an extinct family of Rhynchocephala. L. C. M.

Snow, Prof. F. H. On the Dermal Covering of a Mosasauroid Reptile (*Liodon dyspelor*, Cope). *Kansas City Rev. Sci. Ind.* vol. ii. pp. 451–454.

Describes and figures an anterior paddle from the Cretaceous (Niobrara) of Kansas, giving measurements of other bones. Parts of the skin covered with small scales are also described. W. H. D.

Traquair, Dr. R. H. On the Genus *Rhizodus*. *Proc. R. Soc. Edin.* vol. ix. pp. 657–660. (Abstract.)

Sketches the history of *Rhizodus* from the discovery by Ure to most recent papers. The n. sp. *R. ornatus* is described from the L. Carboniferous black-band ironstone of Gilmerton and the Calciferous sandstone at Burdiehouse and Pittenweem. The *Holoptychius Portlockii* of Ag., merged by M'Coy with *R. Hibberti*, is now provisionally placed in the genus *Archichthys*. E. T. N.

——. On Species of *Rhadinichthys* from the Coal Measures. *Proc. R. Phys. Soc. Edin.* vol. iv. pt. iii. pp. 237–245.

Rhadinichthys is not a subgenus of *Palæoniscus*, but is at least generically distinct. *R. Wardi*, Young, *R. monensis*, Egerton, and *R. Grossarti*, all n. sp. from the Coal Measures, are described. E. T. N.

——. On the Genus *Dipterus*, Sedgw. & Murch., *Palædaphus*, Van Beneden and De Koninck, *Holodus*, Pander, and *Cheirodus*, M'Coy. *Annals*, ser. 5, vol. ii. pp. 1–17, pl. iii.

Discusses the affinities of *Dipterus*. Describes the structure of the skull, partly from new examples. The suspensorium is autostylic; and the palato-pterygoid is not separated. Follows Günther in placing *Dipterus* and *Cerotodus* in the Dipnoi, but, with Huxley, keeps this group as a distinct order. The fossil described by Van Beneden and De Koninck as *Palædaphus insignis* is the symphysial part of the lower jaw of a large Ctenododipterine fish, and not the upper jaw of a Plagiostome. *Helodus Kiprijanowi* of Pander receives a like interpretation. *Palædaphus devoniensis* is the upper jaw of an allied species. The specimen upon which M'Coy founded his *Cheirodus pes-ranæ* is a dental plate of *Amphicentrum*, Young, while *Cheirodus* of Pander is probably the same as *Chonchodus* of M'Coy, and both are Dipnoous. E. T. N.

Travers, W. T. L. Anniversary Address to the Wellington Philosophical Society, Feb. 2nd, 1878. *Trans. N. Zealand Inst.* vol. x. *Proc.* pp. 539–544.

Discusses the date of extinction of the Moa.

Trouessart, Dr. E. L. Conspectus systematicus et geographicus Mammalium tam viventium quam fossilium. Catalogue systématique, synonymique et géographique des Mammifères Vivants et Fossiles. [Catalogue of Recent and Fossil Mammals.] *Rev. Mag. Zool.* pp. 93–108.

First fascicule, the Primates (Simiæ, Prosimiæ, and Cheiroptera).

Ward, Dr. Ogier. On the Fossil Fishes of this District. *Papers Eastbourne Nat. Hist. Soc.* for 1877; 3 pp.

Wiedersheim, R. *Labyrinthodon Rütimeyeri.* Ein Beitrag zur Anatomie vom Gesammtskelet und Gehirn der triassischen Labyrinthodonten. [Anatomy of the Skeleton and Brain of Triassic Labyrinthodonts.] *Abh. schweiz. pal. Ges.* Bd. v. pp. 1–56; 3 pls.

Describes in detail the remains of a Labyrinthodon from the Bunter Sandstone of Switzerland (Basel-Schopfheim). Most of the skeleton is represented, but only as a cast, about 50 cm. long. E. T. N.

Williston, S. W. [Dinosauria.] *Trans. Kansas Ac. Sci.* vol. vi.

Winkler, Dr. T. C. Description d'une Espèce Nouvelle de Pachycormus. [New *Pachycormus.*] *Arch. Mus. Teyler,* t. v. pp. 9, pl.

Describes *Pachycormus Westermani,* n. sp., almost entire, from Lias of Ohmden, Wurttemberg.

Woodward, Dr. Henry. On some Armoured Fishes. *Pop. Sci. Rev.* n. s. vol. ii. pp. 1–23, pls. i., ii.; 15 woodcuts.

Describes the Cephalaspidean Fishes and their allies, in the early forms of which the notochord was persistent, thus resembling *Amphioxus.* Notes instances in which crustacean remains from Palæozoic rocks have been described as fish. W. T.

Wrzésnowski, Prof. August. Studien zur Geschichte des polnischen Tur (Ur, Urus, *Bos primigenius,* Bojanus). [Polish Bovidæ.] *Zeitschr. wiss. Zool.* Bd. xxx. supplement, pp. 493–555; 2 woodcuts.

An historical account showing that the names *Tur* and *Zubr* have often been interchanged, and that sometimes they have been understood to represent two different species, namely the *Bos primigenius* and the *Bison europæus.* E. T. N.

Zigno, Baron Achille de. Sui Sirenoidi fossili dell' Italia. [Fossil Sirenia of Italy.] *Boll. R. Com. Geol. Ital.* vol ix. pp. 105–109; and, in French, in *Bull. Soc. Géol. France,* t. vi. p. 66. See above, p. 123.

——. Sopra un nuovo Sirenio fossile scoperto nelle colline de Brà in Piemonte. [New Sirenian from Pliocene of Piedmont.] *Atti R. Ac. Linc.* ser. 3, *Mem.* vol. ii. pp. 939–949.

Describes parts of the head and a rib of *Felsinotherium Gastaldi,* n. sp., from Pliocene.

——. Annotazioni paleontologiche. Aggiunti alla Ittiologia dell' epoca eocena. [Eocene Ichthyology.] *Mem. R. Ist. Ven. Sci.* vol. xx. pp. 14; 8 pls.

Describes and figures 3 new species of fish from the Eocene of Monte Bolca—*Semiophorus gigas, Rhinobatis primævus,* and *Torpedo Egertoni.*

SUPPLEMENT FOR 1874–1877.

Atthey, T. On the Articular Bone and supposed Vomerine Teeth of *Ctenodus obliquus*; and on *Palæoniscus Hancocki*, n. sp., from the Low Main, Newsham, Northumberland. *Trans. Nat. Hist. Soc. Northumb. Durham*, vol. v. pt. 3, p. 227. [1877.] Also in *Annals*, ser. 4, vol. xv. p. 309, as entered (title only) in the GEOLOGICAL RECORD for 1875, p. 271.

——. On *Anthracosaurus Russelli*, Huxley. *Trans. Nat. Hist. Soc. Northumb. Durham*, vol. v. pt. 3, p. 307. [1877.]

Beneden, P. J. van. Description des Ossements Fossiles des Environs d'Anvers. Première Partie. Les Phoques ou les Amphitériens. [Fossil Bones of Antwerp. I. Phocidæ.] *Ann. Mus. R. Hist. Nat. Belg.* t. i. pp. 3–88; map and woodcuts. Folio Atlas of 18 pls. [1877.]

Sketches the affinities, structure, habits, and distribution of recent, and the history of discovery and mode of occurrence of fossil Phocidæ, pp. 3–38. Describes, in detail, the bones of 16 Belgian fossil species, pp. 39–81, concluding with remarks on their stratigraphical grouping. The new species are *Prophoca* (n. gen.) *Rousseaui* and *P. proxima*, both Miocene (L. Pliocene of Vanden Broeck). W. H. D.

Brandt, J. F. Versuch einer Monographie der Tichorhinen Nashörner nebst Bemerkungen über *Rhinoceros leptorhinus*, Cuv., u. s. w. [Monograph of the Tichorhine Rhinoceri, with Remarks on *R. leptorhinus*.] *Mém. Ac. Imp. Sci. St. Pétersb.* sér. vii. t. xxiv. no. 4, pp. 135; 11 pls. [1877.]

Synonymy and osteology of *R. tichorhinus*, *R. Jourdani*, *R. Merckii*, *R. etruscus*, *R. leptorhinus*, &c.

Capellini, Giovanni. Sulla *Balæna etrusca*. *Mem. Ac. Sci. Ist. Bologna*, ser. 3, vol. iii. [1874.]

This new species was found near Sienna.

Cope, Prof. E. D. On the Homologies and Origin of the Types of Molar Teeth of Mammalia Educabilia. *Journ. Ac. Nat. Sci. Philadel.* n. s. vol. viii. pp. 71–91. [1874.]

——. Synopsis of the Vertebrata whose remains have been preserved in the Formations of North Carolina. Appendix B, pp. 29–52, pls. v.–viii., of Report on the Geology of North Carolina, by Prof. W. C. Kerr. Reprinted under the title, The Extinct Vertebrata of North Carolina. 8vo. [? *Raleigh*, 1876.]

Gives a list, describing the new species, all Miocene, *Pneumatosteus* (n. gen.) *nahunticus*, *Portheus angulatus*, *Polydectes biturgidus*, *Zatomus* (n. gen. Dinosauria) *sarcophagus*, *Hypsibema* (n. gen. Dinosauria) *crassicauda*, *Hadrosaurus tripos*, *Eschrichtius polyporus*, *Mesoteras* (n. gen. Cetacea) *Kerrianus*. W. H. D.

Cope, Prof. E. D. Les Vertébrés des formations crétacées de l'Ouest. *Arch. Sci. Phys. Nat.* 1876.

——. On a New Species of Adocidæ from the Tertiary of Georgia. *Pal. Bull.* no. 25, pp. 2–4. 8vo. *Philadelphia,* 1877. And *Proc. Amer. Phil. Soc.* vol. xvii. no. 100, pp. 82–84. [1878.]
Describes *Amphiemys oxysternum,* n. gen. et sp.

——. On a Gigantic Saurian from the Dakota Epoch of Colorado. *Pal. Bull.* no. 25, pp. 5–10. 8vo. *Philadelphia,* 1877.
Describes *Camarosaurus supremus,* n. gen. and sp.

——. On *Amphicœlias,* a genus of Saurians from the Dakota Epoch of Colorado. *Pal. Bull.* n. 27, pp. 5. 8vo. *Philadelphia,* 1877.
Amphicœlias, n. gen., is founded for 2 species, *A. altus* and *A. latus.*

Embleton, D., and T. Atthey. On the Skull and other Bones of *Loxomma Allmanni,* Huxley, from the Low Main, Newsham, Northumberland. *Trans. Hist. Nat. Soc. Northumb. Durham,* vol. v. pt. 3, p. 196. [1877.]

Frič, Dr. Anton. Ueber einen Hyænenschädel. [Hyæna Skull.] *Sitz. k. böhm. Ges. Wiss.* 1874, pp. 124.

Geinitz, Dr. E. [*Trionyx Schlotheimii* from Drift-tufa of Burgtonna is *Cistudo Europæa.*] *N. Jahrb.* 1877, pp. 278, 279.

Geinitz, H. B. Ueber die fossilen Pferde. [Fossil Horses.] *Sitz. Isis Dresden,* 1877, pp. 42–44.
An account of the researches of Rütimeyer, Marsh, and Burmeister among the fossil horses of N. and S. America and of Europe.

Günther, Dr. A. Description of the Living and Extinct Races of Gigantic Land-Tortoises. Pts. i, ii. *Phil. Trans.* vol. 165, pp. 251–284. [1875.] Pts. iii., iv. (abstract) in *Proc. R. Soc.* vol. xxv. p. 506 [1877].
Some specimens found in alluvium under basalt. *Testudo ephippium* (pls. 37–39, 42, 44, 45) is new.

——. Notice of two large Extinct Lizards formerly inhabiting the Mascarene Islands. *Journ. Linn. Soc.* (*Zoology*), vol. xiii. pp. 322–327; 6 woodcuts. [1877.]
Describes a lower jaw and some limb-bones from the Mauritius. *Didosaurus mauritianus,* n. gen. and sp., also *Gecko newtonii,* n. sp., from Rodriguez. E. T. N.

Guérin, R. Etudes zoologiques et paléontologiques sur les Cétacés. [Recent and Fossil Cetacea.] 3 pls. 4to. *Paris,* 1874.

Hasse, C. Die fossilen Squatinæ. *Morphol. Jahrb.* Bd. iii. pp. 33–56, pls. 17, 18. [1877.]

Gives a list of species, U. Jurassic, Cretaceous, Oligocene, and Miocene.

Leidy, Prof. Joseph. Description of Vertebrate Remains, chiefly from the Phosphate Beds of South Carolina. *Journ. Ac. Nat. Sci. Philadel.* n. s. vol. viii. pt. iii. pp. 209–261, pls. xxx.–xxxiv. [1877.]

Describes the Ashley Phosphate Beds. The following species seem to be new:—*Rosmarus obesus* (*Trichecus rosmarus*), *Dinoziphius carolinensis, Ceterhinops longifrons, Eupachemys obtusus, Gryphodobatis uncus, Acrodobatis serra, A. obliquus, Xenodolamia pravus, X. simplex, Xiphodolamia ensis.* W. W.

Martin, —. Beitrag zur Kenntniss fossiler Euganoiden. [Fossil Ganoids.] 2 pls. *Berlin,* 1874.

Morière, —. Communication relative à la découverte faite dans la craie d'Auberville d'une nouvelle espèce d'*Ichthyosaurus* et d'une tête de *Metriorhynchus superciliosus* trouvée dans l'oxfordien. [New Species of *Ichthyosaurus* from Chalk of Auberville, and Head of *M. superciliosus* from Oxfordian.] *Bull. Soc. Linn. Norm.* sér. 3, t. i. pp. 129, 130. [1877.]

Osmont, —. Poissons fossiles de Manosque. [Fossil Fish of the Manosque.] *Bull. Soc. Linn. Norm.* sér. 2, t. x. p. 355. [1876.]

Owen, Prof. R. Monograph on the Fossil Reptilia of the Wealden and Purbeck Formations. Supplement 7. *Pal. Soc.* vol. xxx. pp. 1–7, pls. i.–vi. [1876.]

Describes *Poikilopleuron pusillus, Chondrosteosaurus gigas,* and *C. magnus.*

Pepin, Dr. J. Note sur une Nouvelle Espèce de Steneosaure. *Bull. Soc. Linn. Norm.* sér. 3, t. i. pp. 115–117, plate. [1877.]

Description of remains of a new (unnamed) species of *Steneosaurus* from the Great Oolite of St.-Pierre-sur-Dives.

Peters, W. Ueber zwei fossile Wirbelthiere *Probatrachus vice[n]tinus* und *Hemitrichas schisticola* aus den Tertiärbildungen von Ponte bei Laverda im Vicentinischen. [Tertiary Frog and Fish from the Vicentine.] *Monatsb. k. preuss. Ak. Wiss.* 1877, pp. 678–682, pl.

Describes the above new species.

Plant, John. Footprints of "Dinornis," Bones of "Dinornis," and "Dodo." *Proc. Lit. Phil. Soc. Manch.* vol. 16, pp. 181, 182. [1877.]

The footprints were noticed on sandstone in Poverty Bay, on the W. coast, N. Island, New Zealand.

Sauvage, Dr. H. E. Notice sur les poissons tertiaires de l'Auvergne. [Tertiary Fish of Auvergne.] *Bull. Soc. Hist. Nat. Toulouse,* t. viii. pp. 171–200, pl. [1874.]

A review of the Tertiary fishes of Auvergne. Several genera and species are described, *Prolebias stenoura* being new.

Sauvage, Dr. H. E. Mémoire sur les *Lepidotus maximus* et *Lepidotus palliatus*. *Mém. Soc. Géol. France*, sér. 3, t. i. no. 1, pp. 30, pls. i., ii. [1877.]

Remarks on the affinities of various Ganoid genera, and their range in the Portlandian and Kimeridgian of the Boulonnais. Describes parts of the head of the above species in detail. W. H. D.

Winkler, Dr. T. C. Beschreibung fossiler Tertiär-Fischüberreste, vorzugsweise des Sternberger Gesteins. [Descriptions of Tertiary Fish from Sternberg, &c.] 2 pls. 8vo. *Neubrandenburg*, 1875.

Zittel, Prof. K. A. Ueber *Squalodon Bariensis* aus Niederbayern. [*Squalodon* in L. Bavaria.] *Palæontographica*, Bd. xxiv. Heft 6, pp. 233–246 [1877]; and 24. *Ber. nat. Ver. Augsburg*, pp. 19–46, pl. i. [1877].

Notes occurrence in U. Marine Molasse, and describes the remains.

See also:—

Banning, Dr. List of Bones: p. 126.

Capellini, G. Cetacea and Fish of Lecce Stone: p. 52.

Cartier, R. List of Bones from Siderolitic Deposits: p. 127.

Davies, W. Bones from the Dogger Bank: p. 7.

Davis, J. W. Ichthyography of Yorkshire Coalfield: p. 8.

Fraas, Dr. O. *Gyrodus*, Lebanon: *post*, under INVERTEBRATA.

Friedrich, P. A. *Elonichthys Fritschii*, n. sp.: p. 69.

Koch, Dr. A., and **B. Dezsö.** *Ursus spelæus*: p. 81.

Lundgren, B. Rhætic Fishes, Scania: *post*, under INVERTEBRATA.

M'Coy, F. Fossil Cetacean, Victoria: *post*, under INVERTEBRATA, SUPPLEMENT.

Matheron, P. *Pycnodus*, Urgonian, S. France: *post*, under INVERTEBRATA.

Raffelt, R. Fish-teeth, Teplitz: p. 148.

Savin, A. List of Pliocene Vertebrata, Norfolk: p. 29.

Vincent. *Oxyrhina*: *post*, under INVERTEBRATA.

Young, J. *Petalodus Hastingiæ*: *post*, under INVERTEBRATA.

2. *INVERTEBRATA.*

Sub-Editor Prof. J. F. Blake, M.A., F.G.S.

Abich, Hermann. Geologische Forschungen in den kaukasischen Ländern. 1. Theil. Eine Bergkalkfauna aus der Araxesenge bei Djoulfa in Armenien. Pp. vii, 128; 11 plates (fossils), 31 woodcuts. 4to. *Vienna.*

i. Introduction, pp. 1–7. Describes the position of the beds, which are Permo-Carboniferous. ii. Description of Species, pp. 9–101. The following species are new:—

Ceratites Djoulfensis, C. intermedius, C. tropicus, C. trochoides, C. pessoides.
Nautilus propinquus, N. parallelus, N. convergens, N. dolerus, N. dorsoarmatus, N. tubercularis, N. dorsoplicatus, N. armeniacus.
Orthoceras transversum, O. bicinctum, O. margaritatum, O. turritellum.
Productus intermedius, P. striatus vars. plano-convexus and sphæricus, P. pustulatus var. minutus, P. spinocostatus and vars. cariniferus, expansus, and incurvus, P. intermedius var. helicus.
Spirigera protea vars. quadrilobata, multilobata, alata, and ambigua, S. planosulcata var. rugosa, S. epigona.
Terebratula Djoulfensis.
Streptorhynchus crenistria vars. paradoxus, eusarkos, incurvus, and porrectus, S. peregrinus and vars. inflatus, lævis, and minutus.
Buccinum incertum.
Amplexus coralloides var. geniculatus, A. cornu-bovis.
Clisiophylum leptoconicum. Clisiophyllum/.

Gives a table of the geographical distribution of the 116 forms noticed. iii. Concluding Remarks, pp. 102–108. Distinguishes 4 groups of fossils, one showing an affinity with Mesozoic forms. Postscript, relating to 4 species, pp. 109–126. List of works on the Caucasus, 2 pp. W. W.

Ammon, L. von. Die Gastropoden der Hauptdolomiten und Plattenkalkes der Alpen. [Jurassic Gastropods of the Alps.] 8vo. *Munich.*

Angelin, N. P. Iconographia Crinoideorum in stratis Suecisæ Siluricis Fossilium. Opus postumum edendum curavit Regia Academia Scientiarum Suecica. Pp. iv, 62; 29 pls. Fol. *Holmiæ.*

The *Crinoidea propria* are arranged in four sections according to the number of basal plates—*Trimera, Tetramera, Pentamera,* and *Polymera.* Brief descriptions, with figures, are given of genera and species. Of the *Trimera* 100 species are enumerated, 93 of which are new. They are grouped into 23 genera, of which 13 are new, viz. *Briarocrinus, Patelliocrinus, Leptocrinus, Cordylocrinus, Pionocrinus, Desmidocrinus, Barrandeocrinus, Gissocrinus, Homalocrinus, Clidochirus, Calpiocrinus, Anisocrinus, Pycnosaccus.* Of the *Tetramera* there are 35 species (28

new), arranged in 7 genera, of which *Corymbocrinus*, *Abacocrinus*, and *Cyrtidocrinus* are new. In the *Pentamera* are included 40 species (36 new), belonging to 12 genera, of which 7 are new, *Stelidiocrinus*, *Harmocrinus*, *Sicyocrinus*, *Euspirocrinus*, *Ophiocrinus* (*not* Salter *nor* Semper), *Botryocrinus*, *Eucrinus*. *Polypeltes granulatus*, n. gen. and sp., is the only member of the *Polymera*. These 176 Crinoid species are arranged in 19 families; but no information is given as to the principles on which the classification is based. The Cystidea are classed in three groups:—*Apora*, 3 genera containing 5 new species; *Gemellipora*, 4 genera, of which one is new (*E~~n~~ucystis*), including 11 species, 10 of which are new; *Rhombifera*, 2 genera, 2 species, one of which is new. For the names of the 174 new species see the Index of New Names.
P. H. C.

Angelin, N. P. Tabulæ ineditæ. Die in dieser Ausgabe neu zugekommenen 9 Tafeln. [Unpublished plates of the above.]

——. Palæontologia Scandinavica. Pt. I. Crustacea formationis Transitionis. Fasc. I., II. [Edited by **G. Lindström.**] Pp. ix, 96; 48 pls. 4to. *Stockholm.*

Contains an additional plate and an appendix of 4 pp., with descriptions of *Paradoxides Tessini* and vars. *Wahlenbergi* and *Œlandicus*, *P. affinis*, *P. tuberculatus*, *P. Forchhammeri*, *P. tumidus*, *Centropleura Loveni*, *C. Steenstrupi*, and *Ogygiocaris dilatata*, vars. *Sarsi* and *Stromi*, and *Centropleura dilatata*, Brünnich. R. E., Jun.

Anon. Cephalopods and Evolution. *Leisure Hour*, pp. 149–151.

Refers to the investigations of Barrande, and contends that the theory of evolution is not supported by facts either in the vegetable kingdom or among Brachiopods, Crustacea, or Cephalopods. T. M. H.

Baily, W. H. On the Palæontology of County Dublin. *Journ. R. Geol. Soc. Ireland*, vol. xv. pp. 78–98. *Proc. R. Dublin Soc.* n. s. vol. i. pp. 162–182, and pp. 48–72 of Part I. of 'Guide to the County of Dublin.' (See p. 36.)

Gives lists of fossils, with the best localities for finding them, from the following formations—Cambrian, L. Silurian, L. and U. Carboniferous Limestone, Coal Measures, and Glacial Drift.

Barrett, Dr. S. T. Descriptions of new Species of Fossils from the Upper Silurian Rocks of Port Jervis, N. Y., with notes on the occurrence of the Coralline Limestone at that locality. *Ann. N. York Ac. Sci.* vol. i. pp. 121–124.

The new species are *Discina jervensis*, *Trematis superincreta*, *Receptaculites lateritius*, and *Diphyphyllum integumentum*.

Barris, Rev. W. H. New Fossils from the Corniferous Formation at Davenport. *Proc. Davenp. Ac. Nat. Sci.* vol. ii. pp. 282–288; 2 plates and woodcut.

Describes six new species of invertebrate fossils, and proposes *Stereocrinus* as a new genus of Crinoidea. (From White and Nicholson's List. Original inaccessible.) P. H. C.

Barrois, Dr. Charles, and J. Guerne. Espèces nouvelles de la Craie de l'est du Bassin de Paris. [New Species from the Chalk of the Paris Basin.] *Ann. Soc. Géol. Nord*, t. v. p. 42–64, pls. i.–iii.

The fossils described are mostly from the zone of *Belemnites plenus*; and the question whether its fauna has a Cenomanian or a Turonian facies is discussed. Ten new species are figured and described—*Ammonites Juddii*, *A. Briarti*, *A. Corneti*, *Cerithium luschitzianum*, Geinitz (re-identified), *C. Chelloneixii*, *Scalaria abbreviata*, *Solarium Gosseleti*, *Turbo Heberti*, *Trochus Schluteri*, *Tornatella lacrymoides*. A. J. J-B.

Bayle, Prof. E. Fossiles Principaux des Terrains de la France. [Chief Fossils of France.] *Explic. Cart. Géol. France*, t. iv. pt. 1, pl. 158. 4to. *Paris*. [N.B. the text has not been seen.]

The following new species are figured :—

Phacops Potieri, Proetus Œhlerti, Cyrtoceras Zeilleri, C. Chaperi, Aganides Fourneti: from the Devonian.
Terebratula Faurei, T. latifrons, T. Ranvillensis, T. Quillyensis, Zeilleria egeria: Jurassic.
Uncinulus Œhlerti, U. imperator, Uncinulina fallaciosa, Conchidium inornatum, C. Chaperi, Orthis Douvillei, O. Chaperi, Leptæna cotentina, Strophomena Trigeri, Calceola Gervillei: Devonian.

The Jurassic Belemnites are named as belonging to genera called *Gonioteuthis*, *Pachyteuthis*, *Megateuthis*, *Dactyloteuthis*, *Cylindroteuthis*, *Belemnopsis* (preoccupied), *Hibolites*, and *Duvalia*. The genus *Jovellania* is founded for a Devonian *Orthoceras*.

Nautilus eximius, Buchiceras Tissoti, B. Fourneti, Hoplites gladiator, Pusozia (new genus): Cretaceous species.
Aspidoceras faustum, Stephanoceras Freycineti, Sphæroceras (n. g.), Reineckia (n. g.): Jurassic forms.
Sonneratia (n. g.), Acanthoceras, A. sarthacensis: Cretaceous.
Parkinsonia (n. g.), Perisphinctes mosensis, Arietites Douvillei, Grammoceras (n. g.) fallaciosum, Ludwigia (sic, n. g.) sinon, Hammatoceras (n. g.), Lillia (n. g.), Waagenia (n. g.) propinquans, Hildoceras (n. g.), Neumayria (n. g.): Jurassic.
Turrilites quadrituberculatus: Cretaceous.
Hippopodium Guibali, Crassinella (n. g.) vicinalis, Diceras originale, Bayleia (n. g.), Pouechia, Munier-Chalmas: Jurassic.
Sphærulites Sæmanni, S. Boucheroni: Cretaceous.
Pinna cadomensis, Pseudopecten (n. g.), Camptonectes (n. g.): Jurassic.
Chlamys (n. g. of Pectens): Cretaceous. Preoccupied, sponge.
Ctenostreon (n. g. Lima) Wrighti, Plagiostoma eximium, Limatula (n. g.), Alectryonia (n. g. Ostreidæ) Potieri, Actinostreon (n. g.): Jurassic.
Ceratostreon (n. g.) Delaunayi, Pycnodonta (n. g.), Rhynchostreon (n. g.) Chaperi, Ætostreon (n. g.) consobrinus: Cretaceous.
Lopha (n. g.?) sarthacensis: Jurassic.
Alectryonia Zeilleri, Popula (n. g.? Cidaris), Spatangus decipiens, S. turonensis: Cretaceous.

The new genera are the breaking up of larger ones, as *Pecten*, *Lerna*, *Ostrea*, *Belemnites*, &c. *See Errata p.xxvi.* J. F. B.

Bellardi, L. Catalogo generale dei Molluschi terziarii di Piemonte e Liguria. [Catalogue of the Tertiary Mollusca of Piedmont and Liguria.] Pp. 33. 4to. *Turin*.

——. Descrizione di una nuova specie di *Zeidora* trovati nelle marne del pliocene inferiore della Liguria. [New *Zeidora* from L. Plio-

cene of Liguria.] *Atti R. Ac. Torin.* vol. xiii. pp. 874–878, pl. xx.
The species is *Z. ligustica.*

Benoist, —. Découverte, par M. Wattebled, d'une espèce nouvelle de *Truncatella* fossile à Mérignac. *Act. Soc. Linn. Bordeaux*, sér. 4, t. ii. p. iv.
A Tertiary species, described as *T. Wattebledi.*

——. Sur le genre *Mesostoma* et sur le *Pholas dimidiata* et le *Ph. Branderi.* *Act. Soc. Linn. Bordeaux,* sér. 4, t. ii. pp. xvii, xviii.
Remarks on its aperture, and on a ligamental facette in some Miocene *Pholades.*

——. Observations sur le *Scutella rotundata.* *Act. Soc. Linn. Bordeaux*, sér. 4, t. ii. p. lvii.

——. Sur plusieurs espèces fossiles des marnières de Goas. *Ibid.* p. lxi.

——. Observations sur les Tubicolés et nouvelle diagnose du *Clavagella Brockoni.* *Ibid.* pp. lxxxiii, lxxxiv.
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Bertkau, Ph. Einige Spinnen und ein Myriapode aus der Braunkohle von Rott. [Spiders and a Centipede from the Rott Lignite.] *Verh. nat. Ver. preuss. Rheinl.* Folg. 4, Bd. v. pp. 346–360, pl. v.
Describes 8 species, of which the following are new—*Epeira Troschellii, Linyphia Rottensis, L. Andræi, Erigone* (?) *Dechenii, Histopona* (?) *anthracina, Xysticus* (?) *annulipes.* E. T. N.

Bertsch, H. Ueber die Cephalopoden der schwäbischen Lias. [Lias Cephalopoda of Swabia.] Pt. I. 8vo. *Tübingen.*

Bittner, A. *Conularia* in der Trias. *Verh. k.-k. geol. Reichs.* pp. 281, 282.
Notes the occurrence of the genus in the Alpine Trias, but no name is assigned to the species.

Blake, J. F. On the measurement of the curves formed by Cephalopods and other Mollusks. *Phil. Mag.* ser. 5, vol. vi. pp. 241–263, pl. iv.
Treats of the mathematics of the surface of shells considered as generated by the equiangular spiral, and the most accurate methods of determining the elements of their form. J. F. B.

Böttger, Dr. O. Die Tertiärfauna von Pebas am oberen Marañon. [Tertiary Fauna of Pebas.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 485–504, pl. xiv.
The following species are new—*Hydrobia confusa, H. tricarinata, Pseudolacuna* (gen. nov.) *macroptera, Dreissena fragilis.*

——. Abbildungen seltener oder wenig bekannter Limneen des

Mainzer Beckens. [Rare or little known Limneids of the Mayence Basin.] *Ber. Offenb. Ver. für Naturk.* no. 18, pp. 13–17, pl. ii.
4 species are figured, and notes given.

Böttger, Dr. O. Die Clausilien des Mosbacher Sands. [*Clausiliæ* of the Mosbach Sand.] *Notizbl. Ver. Erdk. Darmstadt*, Folg. 3, Heft 17, pp. 321–323.
Describes 7 species (none new) from L. Pleistocene.

Brady, G. S. A Monograph of the Fossil Ostracoda of the Antwerp Crag. *Trans. Zool. Soc.* vol. x. pp. 379–409, pls. lxii.–lxix.
The series is different from that in the English Crag; and there are no freshwater species. 50 species are described, and their position in 6 zones indicated. The new forms are:—

Pontocypris propinqua.
Cythere ellipsoidea, C. belgica, C. œdichilus, C. petrosa, C. trapezia, C. polytrema.
Cytheridea cypridioides.
Loxoconcha latissima, L. bitruncata, L. variolata.
Cytherura Broeckiana.
Cytheropteron intermedium, C. pipistrella.
Cytherideis recta.
Cytherella elliptica, C. nodosa.

H. A. N.

Brongniart, C. Note sur la découverte d'un orthoptère coureur de la famille des phasmiens (*Protophasma Dumasi*) dans les terrains supra-houillers de Commentry (Allier). [New Phasmian from Permian of Allier.] *Bull. Soc. Entom. France*, t. vii. pp. 69, 70; *Ann. Soc. Entom. France*, sér. 5, t. viii. pp. lvii, lviii; *Compt. Rend. Soc. Entom. Belg.* sér. 2, t. xlvii. pp. 9–12.
More fully in the following. The group was not known as Pretertiary before this discovery.

——. Note sur un nouveau genre d'Orthoptère fossile de la famille des Phasmiens provenant des terrains supra-houillers de Commentry (Allier) (*Protophasma Dumasii*). [New Phasmian from Commentry.] *Ann. Sci. Nat.* sér. 6, t. vii. pp. 8, pl. 6. Translated in *Geol. Mag.* dec. ii. vol. vi. pp. 97–102, pl. iv. (1879).

——. Note rectificative sur les espèces des Bibionides fossiles du genre *Plecia*. [Fossil *Pleciæ*.] *Ann. Soc. Entom. France*, sér. 5, t. viii. pp. xlvii, xlviii.
More fully in the following.

——. Note rectificative sur quelques Diptères Tertiaires et en particulier sur un Diptère des Marnes Tertiaires (Miocene Inférieur) de Chadrat (Auvergne), la *Protomyia Oustaleti*, qui devra s'appeler *Plecia Oustaleti*. [Correction of name of *Protomyia* (from L. Miocene of Auvergne) to *Plecia*. *Bull. Sci. Dép. Nord*, sér. 2, ann. i. pp. 73–81. See Geological Record for 1876, p. 271.
Discusses all the fossil Bibiopsides and Protomyiæ, referring all to *Plecia*, and re-describes *P. Oustaleti*.

Brusina, S. Molluscorum fossilium species novæ et emendatæ in tellure tertiaria Dalmatiæ, Croatiæ et Slavoniæ inventæ. [New and Corrected Fossil Mollusca of Dalmatian, Croatian, and Slavonian Tertiaries.] *Journ. Conchyl.* sér. 3, t. xviii. pp. 347–356.

Describes 22 new species, and re-names 6 previously known (marked †). The initials are those of the provinces.

Melania Gaji, S.; M. constricta, S.
Melanopsis arcuata, S.; M. coronata, S.; †M. cognata, S.
Micromelania Rissoina, S.; M. serratula, S.
Pyrgula baccata, S.; P. interrupta, S.; P. aspera, S.
Hydrobia Rossii, S.
Fossarulus Crossei, D.
Lithoglyphus amplus, S.
Valvata balteata, S.; †V. subcarinata, C. S.
Neritina imbricata, D.; N. Lorkovici, D.; N. slavonica, S.; †N. sycophanta, S.
†Helix Neumayri, D.
Planorbis striatus, S.; P. lineolatus, S.
Valenciennesia pelta, C.
Unio pterophorus, S.; U. Kukuljevici, S.; †U. Neumayri, S.; †U. Morovici, S.

W. H. D.

Buckman, [Prof.] J. On some slabs of *Trigonia clavellata* from Osmington Mills, Dorset. *Proc. Dorset Field-Club*, vol. 2, pp. 19, 20, plate.

Buckman, S. S. On the species of *Astarte* from the Inferior Oolite of the Sherborne District. *Proc. Dorset Field-Club*, vol. 2, pp. 81–92; 2 pls. and woodcuts.

Describes 18 species, 9 being new. Group 1 (shell more or less smooth) includes the following species—*A. Mansellii*, *A. expansa*, *A. globata*, *A. tumida*, and *A. pulchra*. Group 2 (shell with distinct ribs or ridges) includes the new species *A. elongata*, *A. multicostata*, *A. spissa*, and *A. subquadrata*. R. B. N.

Carter, H. J. Mr. James Thomson's Fossil Sponges from the Carboniferous System of the South Coast of Scotland. *Annals*, ser. 5, vol. i. pp. 128–142, pls. ix., x.

Describes *Hyalonema Smithii* and the following new species—*Pulvillus Thomsonii*, *Dysidea antiqua*, *Rhaphidhistia vermiculata*. The first two of these new forms are now calcareous; but he regards them as having been originally siliceous. H. A. N.

——. On new Species of Hydractiniidæ, Recent and Fossil, and on the Identity in Structure of *Millepora alcicornis* with *Stromatopora*. *Annals*, ser. 5, vol. i. pp. 298–311, pl. xvii.

Includes the description of *Hydractinia Kingii*, thought to be from Sub Apennine strata. We have every thing structural in the corallum of *Millepora alcicornis* that is to be found in *Stromatopora*, except the *stelliform* systems of venation; and something similar to this has been observed by Moseley; hence he concludes them to be allied. Figures as *M. Woodwardii* the L. Chalk fossil previously named *Bradya tergestina*. Many of the "*Coscinoporæ*" belong to this genus.

H. A. N.

——. Emendatory description of *Purisiphonia Clarkii*, Bk., a

Hexactinellid Sponge from N.W. Australia. *Annals*, ser. 5, vol. i. pp. 376–379.

The species is from the U. Oolite or Cretaceous of Queensland.

Carter, H. J. On Calcareous Hexactinellid Structure in the Devonian Limestone; large fossil Hydrozoic Coralla from the Chalk; and further Observations on the Replacement of Silex by Calcite. *Annals*, ser. 5, vol. i. pp. 412–419.

——. On the probable Nature of the Animal which produced the Stromatoporidæ, traced through *Hydractinia*, *Millepora alcicornis*, and *Caunopora* to *Stromatopora*. *Annals*, ser. 5, vol. ii. pp. 304–324.

Detailed remarks on various parts of the structure of the group, more or less controversial.

——. On *Stromatopora*. *Annals*, ser. 5, vol. ii. p. 85.

Has found hexactinellid structure in a *Stromatopora*.

Cash, W. Notes on Carboniferous Cephalopoda.—Part I. *Proc. Geol. Soc. Yorksh.* n. s. pt. iv. pp. 257–279, pl. xi.

Gives a general notice of the structure of recent Cephalopoda, with a sketch of the classification of the class, and tables of distribution of the chief genera and families in time. J. P. D.

Clessin, S. Vom Pleistocaen zur Gegenwart. Eine conchyliologische Studie. [From Pleistocene to Recent; a Conchological Study.] *Corr.-Blatt zool.-min. Ver. Regensburg*, 32 Jahrg. pp. 42–64, 67–70.

A continuation. See Geological Record for 1877, p. 304.

Cotteau, G. Observations sur les fossiles des terrains tertiaires moyens de la Corse et notamment sur les Echinides. [M. Tertiary Fossils of Corsica, especially the Echinids.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 71–76.

Preliminary note of a work about to be published by M. Locard and himself.

——. Echinodermes réguliers. *Pal. Franç. Terr. Jurassique*, sér. i. livr. 39, pp. 225–272, pls. 203–214; livr. 40, pp. 273–304, pls. 215–226; livr. 41, pp. 305–352, pls. 227–238.

Describes *Cidaris Locardi* as new. Gives a *résumé* of all Jurassic Cidarids. The new species are *Rhabdocidaris major*, *R. rhodani*, *R. Gauthieri*, *R. varusensis*, and *R. bononiensis*. Gives a *résumé* of the genus. *Diplocidaris* is treated in the same way, *D. Gauthieri* being new. The Salenidæ are just commenced. E. T. N.

——. Considérations générales sur les *Cidaris* du terrain jurassique de Normandie. [Jurassic Cidarids of Normandy.] *Compt. Rend. Assoc. Franç.* sess. 6, pp. 479–481.

7 species are recorded from the Lias of May (Calvados), of which 4 are peculiar to the locality; 10 from the Bajocian, of which 3 are peculiar to Normandy; 7 from the Bathonian, 2 being Norman only. A single Callovian species, peculiar to the Orne. None from the Oxfordian proper; 3 from the Corallian, of which one is peculiar to Normandy; 3 Kimmeridgian, all Norman only. G. A. L.

Cotteau, G. Sur des Fossiles Crétacés de l'Yonne. [Cretaceous Fossils of Yonne.] *Bull. Soc. Sci. Hist. Nat. Yonne*, sér. 2, t. xii. p. 42.

——. Description des Echinides de la Colonie du Garumnien. [Garumnian Echinidæ.] *Ann. Sci. Géol.* t. ix. An Appendix to **Leymerie's** paper (see p. 85), pp. 55–72, pls. 4–7.

The following new species are described and figured:—*Cyphosoma pseudomagnificum* (previously classed as *C. magnificum*), *Echinocorys semiglobus*, *Schizaster antiquus*, and *Cyclaster coloniæ*. W. W.

——. Etudes sur les Echinides fossiles du département de l'Yonne. Tom. ii. pp. 351–518 (end), pls. 77–84. 8vo. *Paris.*

A continuation. See Geological Record for 1877, p. 328. Finishes the Micrasters. Pp. 365–428 is a Stratigraphical Notice on the Senonian Stage in the neighbourhood of Sens, by **J. Lambert.** The rest is on the Echinoderms of the Senonian, none being new. H. A. N.

——. Echinides du Calcaire grossier de Mons. *Mém. Cour. Acad. R. Belg.* t. xlii. 12 pp., plate.

6 species are described, of which *Echinanthus Corneti* and *Linthia Houzeaui* are new.

——. Echinides nouveaux ou peu connus. Nos. 111–120, pp. 202–217, pls. 29, 30. [1878, undated.] 8vo. *Fontainebleau*; and *Rev. Mag. Zool.* ser. 3, t. 6, pp. 140-145, 170-175, 194-200.

The following new species are described and figured:—*Pseudodiadema Cayluxense*, L. Lias (Tarn-et-Garonne); *P. albense* (radioles only) and *Cidaris Delatourei* (radioles only), Albian (Aube); *Rhabdocidaris Thomasi*, probably Cretaceous (Constantine, Algeria); *Psammechinus sulcatus*, Pliocene (Isl. Rhodes, Santorin, and Pyrenees); *Spatangus Szaböi*, U. Tertiary (Isl. Milo); *Lovenia Gauthieri* and *L. Lorioli*, Molasse (Drôme). W. P. S.

Cotteau, G., A. Péron, and V. Gauthier. Echinides fossiles de l'Algérie. Quatrième fascicule. Etage Cénomanien (Première partie). 8vo. *Paris* and *Auxerre.* Pp. 128; 8 pls. [See Geological Record for 1875, p. 301, and for 1876, p. 273.

The Cenomanian comprises the most important and widely distributed beds in Algeria, reaching often a thickness of 500 metres, and constituting part of most of the great mountain-ranges, excepting those of the coast. It has furnished the greatest number and variety of Echini of any in Algeria, 45 species being known, the majority of these new and special to Algeria, about a third only having been previously described and discovered in synchronous rocks in France. The Spatangidæ, especially *Hemiaster*, abound, whilst *Catopygus*, *Ceratomus*, and *Micraster*, with others, abundant in European beds, are absent. Exhaustive lists of the species from the various palæontological zones are given; and the following species are described as new by MM. Péron and Gauthier, or are published for the first time from specimens named in MS. in the collection of M. Coquand, these latter being indicated by an asterisk:—

*Cardiaster pustulifer.
Holaster Coquandi, H. pyriformis.
Epiaster Henrici (=E. Heberti), E. crassissimus (=E. crassior).
Hemiaster Meslei, H. Ameliæ, *H. granosus, H. pseudofourneti, H. Gabrielis, H. proclivis, H. setifensis, H. Jullieni, H. Sardensis, H. Lorioli, *H. Bourguignati, H. Chauveneti, *H. Zitteli, *H. hippocastanum.

W. P. S.

Crane, Agnes. The General History of the Cephalopoda, Recent and Fossil. *Geol. Mag.* dec. ii. vol. v. pp. 487–499; and pp. 16, 8vo, *Brighton*.

A general popular sketch.

Dames, W. Ueber ein neue Art der Cirripeden-Gattung *Loricula* aus der Kreideablagerung des Libanon. [New Cirripede (*Loricula*) from Cretaceous of Lebanon.] *Sitz. Ges. nat. Freunde Berlin.*

Davidson, Thomas. A Monograph of the British Fossil Brachiopoda. Vol. iv. pt. 2, no. 2. Supplement to the Jurassic and Triassic Species. Pp. 145–241, pls. xvii.–xxix. *Pal. Soc.*

Continues the *Terebratulæ*, of which *T. Bradfordiensis*, *T. Craniæ* (Proc. Dors. N. H. F.-C. vol. i. pl. ii. fig. 3), *T. Whitakeri*, and *T. Walfordi* are new. Of the *Waldheimiæ*, *W. Hughesi* (not figured) and *W. Leckenbyi* are new; and of *Rhynchonella*, *R. Leedsii*, *R. Tatei*, *R. Stephensi*, *R. Glevensis*, as also *Crania Griffini* and *C. spiniferina*. Concludes with a tabular list. J. F. B.

Dawson, Dr. J. W. *Stromatopora* as distinguished from *Millepora*. *Annals*, ser. 5, vol. ii. pp. 28–30.

These scarcely resemble each other, except in being calcareous and porous, *Millepora* having no concentric laminæ.

Deicke, Dr. H. Beitrag zur Kenntniss der geognostischen und palæontologischen Beschaffenheit der unteren Ruhrgegend. Zweiter Beitrag. Die Brachiopoden der Tourtia von Mülheim a. d. Ruhr. [Brachiopods from the Tourtia of Mülheim on the Ruhr.] Pp. 28, plate. 4to. *Mülheim.*

Also refers to corals.

Hau /.

Depontaillier, J. Diagnose d'une nouvelle espèce de *Nassa* des argiles bl~~[illegible]~~ eues de Biot près Antibes. [New *Nassa* from Pliocene of Biot, Maritime Alps.] *Journ. Conchyl.* sér. 3, t. xviii. pp. 357, 358.

The species is named *N. Cossmanni.*

Deslongchamps, E. E. Le Jura Normand. Études paléontologiques des divers niveaux Jurassiques de la Normandie, &c. 2 livraison, monographie 6, pp. 31–78, plates. Fol. *Paris* and *Caen.*

Discusses the classification of the Belemnites, and describes as new *B. sub-blainvillei, B. munieri, B. brevicanalis, B. tetramerus.* Concludes with an introduction to the Tetrabranchiates.

Dewitz, H. Doppelkammerung bei silurischen Cephalopoden. [Double Chambers in Silurian Cephalopods.] *Zeitschr. ges. Nat.* Folg. 3, Bd. iii. pp. 295–310, pl. 13.

Describes the dark lines which cross the chambers when these are full of crystals as supernumerary septa.

Downes, Rev. W. The Fossils of the Culm Measure Limestones around Holcombe Rogus. *Trans. Devon. Assoc.* vol. x. pp. 330–334.

Posidonomyæ are the characteristic fossils, some being perhaps 15 inches across. Records *Goniatites, Chonetes hardrensis,* &c.

Duisberg, —. Zur Bernstein-Fauna. [Fauna of Amber.] *Schrift. phys.-ökon. Ges. Königsberg,* Bd. ix. p. 23.

Records the discovery of a minute hymenopterous insect of the family Proctotrupidæ.

Duncan, Prof. P. M. On the *Salenidæ,* Wright. Part III. On a third Form of recent *Saleniæ,* and on the *Saleniæ* from the Tertiary Deposits. *Annals,* ser. 5, vol. ii. pp. 59–67.

Gives details relative to *Salenia tertiaria,* Tate, and a notice of *S. Pellati,* Cott.

——. On the Syringosphæridæ, an Order of Extinct Rhizopoda. *Annals,* ser. 5, vol. ii. pp. 297–299.

These are large globular bodies from the Trias? of Karakorum, Yarkand, consisting of tubes with an interradial reticulation of inosculating tubes. They present two genera—*Syringosphæra,* with knobs and pores on the surface, and *Stoliczkaria,* without. J. F. B.

Etheridge, Robert. Palæontology of the Coasts of the Arctic Lands visited by the late British Expedition under Capt. Sir George Nares, R.N. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 568–639, pls. xxv.–xxix.

The fossils belong to the Palæozoic rocks, 30 being referred to the Carboniferous, 3 to the Devonian, 61 to the Silurian. Full descriptions with bibliography are given of each species or doubtful form; and the following are described as new:—*Receptaculites arcticus*, *Syringopora parallela*, *Zaphrentis offleyensis*, *Amplexus Feildeni*, *Pentamerus Coppingeri*, *Strophodonta Feildeni*, *Murchisonia latifasciata*, *Helicotoma Naresii*, *Platyceras naticoides*, from Silurian, *Spirifera Aldrichi* from Devonian. The general facies is more American than British.

J. F. B.

Etheridge, Robert, Jun. On our Present Knowledge of the Invertebrate Fauna of the Lower Carboniferous Series of the Edinburgh Neighbourhood, especially in that Division known as the Wardie Shales; and on the First Appearance of certain Species in these Beds. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 1–26, pls. i., ii.

Gives an account of previous knowledge. Describes 35 species, of which *Avicula Hendersoni*, *Anthracoptera obesa*, *Myalina sublamellosa*, *Nuculana Sharmani*, and *Littorina scotoburdigalensis* are new.

J. F. B.

——. Further Remarks on Adherent Carboniferous *Productidæ*. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 498–504, woodcut.

Notes the occurrence of further specimens of adherent Brachiopods, some of which may be *Chonetes*.

——. A Catalogue of Australian Fossils, including Tasmania and the Island of Timor; stratigraphically and zoologically arranged. Pp. viii and 232. 8vo. *Cambridge.*

Gives the geological horizon, bibliography, and localities of each species, and a list of works consulted.

——. A Synopsis of the known Species of Australian Tertiary Polyzoa. *Journ. R. Soc. N. S. Wales*, vol. xi. pp. 129–143.

Gives a short history and bibliography, and a list of the species, with their synonymy, localities, and horizons.

——. On the History of Palæozoic Actinology in Australia. *Trans. R. Soc. Victoria*, vol. xiv. pp. 102–108.

Gives a bibliographical account of the description of Australian Palæozoic corals, with lists of species.

——. Notes on Carboniferous Mollusca. *Annals*, ser. 5, vol. ii. pp. 30–35, pl. i.

I. On the hinge-structure and generic affinities of *Pecten Sowerbii*. It belongs to the genus *Entolium*. II. On the hinge-structure of *Nucula gibbosa* and *Nuculana attenuata*. These have an internal cartilage-pit, and are therefore not *Ctenodontæ*. J. F. B.

——. Palæontological Notes. *Geol. Mag.* dec. ii. vol. v. pp. 117–119, 269, 270.

Records *Dentalium ornatum*, *Pentremites*, and *Spirorbis spinosa* from

Scotch Carboniferous rocks. Among other notes, records *Pleurotomaria humilis* and *Ascodictyon stellatum* as British, and discusses the nature of *Arbusculites argentea.* J. F. B.

Etheridge, R., Jun., and Prof. H. A. Nicholson. On the Genus *Palæacis* and the Species occurring in British Carboniferous Rocks. *Annals*, ser. 5, vol. i. pp. 206–227, pl. xii.

Give a detailed history of the genus and an account of the macroscopic and microscopic structure of the species. Describe *P. cuneiformis*, *P. obtusa*, and *P. cyclostoma* as British, and add a summary of the known species. Conclude, from the microscopic structure, that the genus should be placed with the Protozoa rather than with the perforate corals. H. A. N.

Ewald, —. Ueber Beobachtungen an einigen Arten der Gattung *Hippurites.* [Observations on some Species of *Hippurites.*] *Monatsb. k. preuss. Ak. Wiss.* pp. 747–751.

Notes on the structure of the two valves.

Fagot, —. Introduction à l'Étude sur les Mollusques des alluvions quaternaires du Lauraguais. [Quaternary Mollusca of the Lauraguais.] *Mat. Hist. Homme*, sér. 2, t. x. p. 17.

Fischer, Dr. Paul. Essai sur la distribution géographique des Brachiopodes et des Mollusques du littoral océanique de la France. [Distribution of Mollusca of the Oceanic Coasts of France.] *Act. Soc. Linn. Bordeaux*, vol. xxxii. p. 171.

Parts viii.–xii. of geological interest. Origin of the Mollusca of the ocean-coast of France, changes of the habitats of species; English Crag fossils not found in British seas but on French coasts; Tertiary Mediterranean fossils similarly migrated; extension of species of Mediterranean origin. W. W.

Fleischhacker, Robert. Ueber neogene Cardien. [Neogene *Cardia.*] *Verh. k.-k. geol. Reichs.* pp. 402, 403.

The forms pass gradually one into the other. Refers specially to *C. obsoletum.*

Fontannes, F. Etude sur les faunes malacologiques miocènes des environs de Tessanne et de Haute Rives (Drôme). [Miocene Mollusca of Drôme.] *Rev. Sci. Nat.* t. vi. pp. 24.

Ford, S. W. Descriptions of two new Species of Primordial Fossils. *Amer. Journ.* ser. 3, vol. xv. pp. 124–127, woodcut.

The species are *Protocyathus rarus* and *Solenopleura nana* from the Potsdam Limestone.

——. Note on *Lingulella cœlata.* *Amer. Journ.* ser. 3, vol. xv. pp. 127–129.

Formerly regarded as an *Obolella.*

Ford, S. W. Note on the Development of *Olenellus asaphoides*. *Amer. Journ.* ser. 3, vol. xv. pp. pp. 129, 130.

Describes the mode of loss of the interocular spines. See GEOLOGICAL RECORD for 1877, p. 308.

——. On certain Forms of Brachiopoda occurring in the Swedish Primordial. *Amer. Journ.* ser. 3, vol. xv. pp. 364–366.

Compares the opercula of *Hyolithes* of the New York Primordial rocks with the valves of *Acrothele* of Linnarsson from the Swedish Primordial. W. H. D

Fraas, Dr. Oscar. Geologisches aus dem Libanon. [The Geology of Lebanon.] *Jahresh. Ver. Nat. Württ.* Jahrg. xxxiv. pp. 257–391, plates iii.–viii. See above, p. 162.

The following new species are described:—*Ostrea succini*, *Sarcinula Salimæ*, *Astarte libanotica*, *Lutraria sinuata*, from the Cenomanian; *Pseudastacus hakelensis*, *P. minor*, *Geoteuthis libanotika*, *Gyrodus syriacus*, *Toxaster pentagonalis*, *Hippurites Lewisii*, *Nerinæa Schickii*, *Rostellaria Rustemi*, *Globiconcha Lewisii*, *Neritopsis ornata*, *Natica patulæformis*, *Turbo Moreli*, *Actæonella absalonis*, from the Turonian.

J. F. B.

Fritsch, K. v. Fossile Korallen der Nummulitenschichten von Borneo. [Corals of the Nummulitic of Borneo.] *Palæontographica*, Suppl. Bd. iii. pp. 93-135, pls. xv.–xvii.

These corals have been crystallized at a later period. They include the following new species, as well as three species described before:—

Heliopora Böttgeri.
Smilotrochus brevis.
Trochosmilia discoides.
Stephanosmilia humilis.
Holocœnia stellata.
Ceratophyllia (n. gen.) flabelloides, C. hippuritiformis.
Heliastræa Verbeekiana.
Solenastræa oligophyllia.
Astrocœnia foliacea, A. immersa.
Latimæandra discus.
Astrangia folium.
Rhizangia agglomerata.
Lophoseris hospes.
Dendracis Geyleri.
Actinacis digitata.
Polyaræa (n. gen.) gemmans.

J. F. B.

——. Einige Crustaceenreste der Eocänbildungen von Borneo. [Eocene Crustacean of Borneo.] *Palæontographica*, Suppl. Bd. iii. pp. 136–138.

Describes *Lobonotus*? *australis* as a new species.

——. Einige eocäne Foraminiferen von Borneo. [Eocene Foraminifera of Borneo.] *Palæontographica*, Suppl. Bd. iii. pp. 139–145, pls. xviii., xix.

These are *Orbitoides*, of which *O. omphalus* and *O. decipiens* are described as doubtfully new, and *Patellina scutum* and *P. trochus* as new.

Gardner, J. S. On the Cretaceous *Dentaliidæ*. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 56–65, pl. iii.

Describes the new species *Siphodentalium curvum* from the L. Greensand; 7 species from the Gault, of which *Dentalium alatum*, *D. Jeffreysi*, *D. acuminatum*, *Siphonodentalium affine* [and *S. curvum*], and *Cadulus gaultinus* are new; 5 from the U. Greensand, of which *D. divisiense* and *Entalis Meyeri* are new; and 2 from the Chalk, of which *D. majus* is named only. J. F. B.

Geinitz, Dr. H. B. Ueber *Palæojulus dyadicus*. *N. Jahrb.* p. 733.

Maintains the myriapodous character of the genus. [In 1880 allows it to be a fern.]

Gemmellaro, Prof. G. G. Sopra alcune Faune Giuresi e Liasiche di Sicilia. Studi Paleontologici. Continuation (see GEOLOGICAL RECORD for 1877, pp. 310, 330).

Fasc. 8. Sui fossili del calcare crystallino delle Montagne del Casale e di Bellampo nella Provincia di Palermo. [Fossils of Liassic Limestone, Palermo.] Pp. 233–328, pls. xxi.–xxv. *Giorn. Sci. Nat. Econ. Palermo*, vol. xiii. pp. 116–211.

The following species are described as new, besides others previously known (new generic and subgeneric names are shown by capitals):—

Phylloceras nummulitoides.
Actæonina Pompilia.
PALÆONISO pupoides, P. appenninica, P. nana, P. ovata.
CLIMACINA Catherinæ, C. Mariæ, C. Josephina, C. gracilis.
Euchrysalis dactyliformis.
Chemnitzia Tatia, C. Moorei, C. polyplecta, C. Veturia, C. Ethra, C. Antiope, C. Thalestris, C. Stoliczkai, C. Janus, C. transitoria.
C. (RHABDOCONCHA) multistriata, R. multipunctata.
C. (Pseudomelania) megastoma, P. Niobe, P. Falconeri, P. Marii, P. Rhea, P. Cleola, P. Aristomache, P. Erope, P. Hersilia, P. parvula, P. pyramidelliformis, P. raphis, P. eulimoides.
C. (OONIA) Hebe, O. turgidula, O. Gregorii, O. rupestris, O. euspiroides.
C. (MICROSCHIZA) myrto, M. acutispira.
Pachystylus conicus, P. cylindricus, P. subangulatus.
Fibula Gastaldii.
CERITHINELLA Italica, C. elegans, C. Piettei, C. Manzonii, C. Stefanii, C. turritelloides, C. scherina, C. cerithiiformis.
Cerithium aptyxoides, C. Ancai, C. Frauenfelderi, C. Zezii, C. Pironai, C. Herbichi, C. heterocosmum, C. crystallinum, C. pentaplocum, C. Strueveri, C. Todaroi, C. muriciforme.
TOMOCHEILUS Deslongchampsi, T. gradatus, T. semiplicatus, T. asper, T. clathratus.
ALARIOPSIS clathrata.
Alaria psyche, A. tornata, A. Capellinii, A. Guiscardii.
Tylostoma antiquum, T. Zitteli, T. Sellæ, T. densistriatum, T. rimatum.
Natica (Euspira) Billiemensis.
Nerita deshaysiæformis, N. Cornaliæ, N. neritina, N. Clymene, N. Calypso, P. Philyræ, N. Beroe, N. Giordanoi, N. thalassica, N. oceanica, N. Amphitrite, N. Stoppanii, N. Haueri, N. Tethys.
Neritopsis frondosa, N. Busambrensis.

The new genera *Palæoniso* and *Climacina* are Chemnitziadæ; *Cerithinella* and *Tomocheilus* are Cerithiadæ; and *Alariopsis* a Muricid or Aporrhaid. W. H. D.

——. Sopra due nuovi generi di Gasteropodi provenienti della zona a *Terebratula aspasia*. [Two new genera of Gastropods from the zone of *T. aspasia.*] *Bull. Soc. Sci. Nat. Econ. Palermo*, no. 8.

Short notice of a forthcoming work.

Giard, A. Note sur les Bibionides fossiles. [Fossil Bibionidæ.] *Bull. Sci. Dép. Nord*, sér. 2, t. i. pp. 12–16.

Criticism of Oustalet and Brongniart; continuation of article noticed in SUPPLEMENT, p. 357.

——. Les Coléoptères fossiles d'Auvergne par M. Oustalet; remarques critiques. [Criticisms on the Fossil Coleoptera of Auvergne.] *Ibid.* pp. 56–63, 109–118.

Deals also with Neuroptera.

G[irard], M. Les perforations des bois fossiles. *La Nature*, t. vi. p. 112.

——. Une très-ancienne araignée. *Ibid.* p. 144.

Notice of Brongniart's recent papers.

Goss, Herbert. Three papers on Fossil Insects and the British and Foreign Formations in which Insect-remains have been detected. No. 1. The Insect Fauna of the Recent and Tertiary Periods. *Proc. Geol. Assoc.* vol. v. no. 6, pp. 282–343; and, under a different title, 24 *Ann. Rep. Brighton Nat. Hist. Soc.* pp. 81–112.

Reviews the literature, taking each formation separately, noting all genera and many species, with full references.

——. On the Insect Fauna of the Secondary or Mesozoic Period, and the British and Foreign Formations in which their Remains have been detected. 24 *Ann. Rep. Brighton Nat. Hist. Soc.* pp. 139–162.

Similar to the last. In full in *Proc. Geol. Assoc.* vol. vi. no. 3, pp. 116–150 (1879), with altered title.

——. Introductory Papers on Fossil Entomology.—No. 1. On the Importance of an Acquaintance with the Subject; its bearing on the question of the Evolution of Insects, and the evidence it affords of the Antiquity of their Family Types. No. 2. The comparative Age of the existing Orders of Insects, and the Sequence in which they appeared on the Geological Horizon. No. 3. Palæozoïc Time. On the Insecta of the Devonian Period, and the animals and plants with which they were correlated. *Entomologist's Monthly Magazine*, vol. xv. pp. 1–5, 52–56, 124–127.

——. Notes on a Fossil Wing of a Dragon-fly from the Bournemouth Leaf-beds. *Entomologist*, vol. xi. pp. 193–195, plate.

——. [Insects from Bournemouth (M. Eocene) Leaf-beds.] *Proc. Entom. Soc. Lond.* p. 8.

Notes the genera.

Gottsche, Dr. C. Beiträge zur Geologie und Palaeontologie der argentinischen Republik: Palaeontologischer Theil, III. Abtheilung. Ueber jurassische Versteinerungen aus der argentinischen Cordillere. [Jurassic Fossils from the Argentine Cordilleras.] *Palæontographica,* Suppl. iii. pp. 1–50, pls. i.–viii.

Describes Liassic or Oolitic Fossils from Espinazeto, of which the following are new:—

Phylloceras neogæum.
Harpoceras Zitteli, H. proximum, H. andium, H. Stelzneri.
Stephanoceras singulare, S. multiforme, S. Giebeli, S. submicrostoma.
Simoceras antipodum.
Nerinæa Stelzneri.
Cucullæa sparsicosta.
Leda striatissima.
Trigonia Stelzneri, T. Lycetti, T. prælonga, T. rectangularis.
Lucina lævis, L. intumescens, L. Goliath, L. dosiniæformis.
Astarte andium, A. clandestina.
Opis exotica.
Venus peregrina.
Rhynchonella andium.

Describes 24 species by European names. Describes as new from the Puente del Luca a *Gryphæa,* and from Caracoles, in Bolivia, *Perisphinctes Lorentzi* and *Rhynchonella caracolensis,* and 5 others by European names from beds from Lias to Oxfordian. J. F. B.

Gümbel, C. W. Einige Bemerkungen über Graptolithen. [Remarks on Graptolites.] *N. Jahrb.* pp. 292–296, woodcuts.

By covering the fossil with Canada balsam dissolved in chloroform and etching the stone with dilute acid he shows there is a solid axis, a longitudinal canal, and a projecting lip within each cell in the *Monograpti,* but no solid axis in the *Diplograpti.* Specimens from German Silurian. J. F. B.

Gurley, William. Notice of the Discovery of the Position of the Crural Processes in the Genus *Atrypa.* *Proc. Amer. Phil. Soc.* vol. xvii. no. 101, pp. 337, 338, pl. xiv.

In *A. reticularis,* from Devonian, Indiana, the loop, which has been regarded as a continuous band connecting the spiral cones of *Atrypa,* is divided in the middle by a suture or broader parting. W. H. D.

Hahn, Otto. Gibt es ein *Eozoon canadense*? Erwiderung auf Dr. C. W. Gümbels und Dr. Carpenters Entgegnung. [Does "*Eozoon canadense*" exist?] *Jahresh. Ver. Nat. Württ.* Jahrg. xxxiv. pp. 155–157, pl. ii.

Comes to the conclusion that it does, and is foraminiferal.

Hall, Prof. James. Geological Survey of the State of New York. Vol. v. Palæontology. Part 2. Illustrations of Devonian Fossils: Gasteropoda, Pteropoda, Cephalopoda, Crustacea, and Corals of the Upper Helderberg, Hamilton, and Chemung Groups. 136 plates, with explanations. (Text in 1880.) 4to. *Albany.*

The following are new species:—

GASTEROPODA, HETEROPODA, and PTEROPODA.

Platyceras auriculatum, P. undatum.
Platyostoma defigurata, P. pleurotoma, P. aplata.
Strophostylus varians.
Macrocheilus? primævus.
Cyclonema crenistria, C. obsoleta, C. concinna.
Loxonema compta, L. teres, L. bellona, L. terebra, L. styliola.
Euomphalus tioga, E. inops, E. rudis, E. hecale. (tioga
Ecculiomphalus comes.
Porcellia Hertzeri, P. rotatoria.
Pleurotomaria plena, P. delicatula, P. ella, P. filitexta, P. itys, P. insolita, P. apicialis, P. planidorsalis, P. disjuncta.
Bellerophon obsoletus, B. mœra, B. tricarinata, B. crenistria.
Tentaculites arenosa, T. scalariformis, T. sicula, T. bellulus, T. attenuatus, T. spiculus.
Coleoprion tenuicinctum.
Hyolithes aclis, H. striatus, H. principalis.
Conularia congregata, C. Cayuga, C. continens, C. crebristria.

CEPHALOPODA.

Orthoceras procrus, O. luxum, O. molestum, O. rudicula, O. Bebryx, O. robustum.
Cyrtoceras gibbosum, C. absens, C. undulatum, C. clavatum, C. Orion.
Trochoceras obliquatus, T. pandion.
Gyroceras validum, G. paucinodus, G. subliratum.
Nautilus buccinum, N. cornulum, N. oriens, N. Barrandei.
Goniatites peracutus.

CRUSTACEA.

Dalmanites concinnus, D. regalis.
Phillipsia minuscula, P. lævis.

CORALS.

Favosites Emmonsii, F. Argus, F. explanata.
Michelinia dividua.
Streptelasma ungula.
Amplexus Hamiltoniæ.
Zaphrentis ampla.
Cyathophyllum robustum, C. nepos, C. nanum.
Heliophyllum irregulare, H. arachne, H. degener, H. proliferum, H. confluens.
Cystiphyllum varians, C. corrugatum, C. conifollis, C. conatum, C. gradatum, C. palum.
Amplexus intermittens.
Cyathophyllum galerum.
Favosites Hamiltoniæ, F. arbuscula.
Chætetes furcatus, C. tenuis, C. humilis, C. tabulatus, C. fruticosus.
Cyathophyllum validum.

E. T. N.

Hannay, J. B. On Siliceous Fossilization. *Proc. Manch. Lit. Phil. Soc.* vol. xvii. pp. 97–103, woodcuts; reprinted in *Mem. Lit. & Phil. Soc. Manch.* ser. 3, vol. 6, pp. 234–242 (1879).

Describes the state of preservation of *Hyalonema Smithii*, a Carboniferous sponge.

Harpe, P. De la. Note sur les Nummulites des Alpes occidentales. [Nummulites of the W. Alps.] *Act. Soc. Helv. Sci. Nat.* for 1877, pp. 227-232.

Gives the range and short descriptions of the 5 species, of which *N. Chavannesi* is considered new. Two species are recorded from the Flysch. W. H. D.

Haupt, Karl. Die Fauna des Graptolithen-Gesteines. Ein Beitrag zur Kenntniss der silurischen Sedimentar-Geschiebe der norddeutschen Ebene. [Fauna of Silurian Pebbles in N. German Drift.] *Neues Lausitzsches Magazin*, Bd. liv. pp. 85; 5 pls.

Heer, Oswald? Ueber Insectenreste aus der rhätischen Formation Schönens. [Rhætic Insects from Scania.] *Geol. Fören. Stockholm Förh.* Bd. 4, pp. 192–197, pl. xiii.

Describes and figures 8 Coleoptera.

Hermite, H. Note sur le genre *Trochotoma*. *Bull. Soc. Géol. France*, sér. iii. t. v. pp. 687–698, pl. xiv.

The genus cannot be split up as Deslongchamps proposed. A detailed revision of all known species with figures of *Trochotoma marbachensis* (n. sp.), *T. Schlumbergeri*, *T. conuloides*, *T. ornata*, and *T. globulus*. Of the 27 species, 2 belong to the M. Lias, 3 to the Inf. Oolite, 9 to the Gt. Oolite, and 14 to the Corallian. G. A. L.

Hoernes, Dr. R. Vergleichung italienischen *Conus*-Formen mit solchen des österr.-ungar. Neogen. [Comparison of Italian Tertiary Species of *Conus* with those of Hungary.] *Verh. k.-k. geol. Reichs.* pp. 205–208.

General remarks on previously described species.

——. Ueber das Vorkommen des Genus *Conus* in den marinen Neogen-Ablagerungen der öster.-ungar. Monarchie. *Verh. k.-k. geol. Reichs.* pp. 191-196.

A short outline of a future supplement to this monograph of the Gastropods of the Vienna Basin, including species of *Conus*, placed in 6 groups—*Stephanoconus* (1 n. sp.), *Dendroconus* (9 new), *Lithoconus* (6 new), *Leptoconus* (2 new), *Rhizoconus* (2 new), *Chelyconus* (12 new), the names only of the new species being given. J. F. B.

James, U. P. Descriptions of newly discovered Species of Fossils from the Lower Silurian Formation: Cincinnati Group. *Palæontologist*, no. 1, pp. 1–8.

I. Describes the following new species:—

Astylospongia humidus (*sic*).
Stromatopora papillata.
Chætetes crustulatus, C. Meeki, C. varians.
Heliolites Shepardi.
Fistulipora? multipora.
Agelacrinus holbrooki.
Helopora dendrina, H. tenuis, H. Meeki, H. parvula.
Ptilodictya Hilli, P. plumaria, P. flexuosa, P. granulosa, P. parallela.
Ceramopora? Beani, C.? irregularis, C. alternata, C. concentrica.
Hippothoa delicatula.
Orthoceras Hindei.
Cyclonema minor.
Strophomena Ulrichi.
Orthis acuminata.
Zygospira modesta, var. Kentuckyensis.
Spirorbis? Lovelandensis.

and from U. Silurian:—

Ptilodictya fimbriata and P. Welshi.

H. A. N.

James, U. P. Description of newly discovered Species of Fossils and remarks on others from the Lower and Upper Silurian Rocks of Ohio. *Palæontologist*, no 2, pp. 9–16.

Describes the following in addition to the plant *Buthotrephis filiciformis*:—

Trachyum undosum.
Stromatopora lunata, S. Hindei.
Lyellia striata.
Chætetes subrotundatus, C. lycoperdon,
Ceramopora Whitei, C. radiata.
Callopora Milfordensis.
Pleurotomaria Ohioensis.
Pterinæa subquadrata.

H. A. N.

Jeffreys, J. G. On the Mollusca procured during the 'Lightning' and 'Porcupine' Expeditions, 1868–70. (Pt. I.) *Proc. Zool. Soc.* pp. 393–416, pls. 22, 23.

In the references to the living species are many comparisons with fossil forms.

——. The Post-Tertiary Fossils procured in the late Arctic Expedition; with notes on some of the recent or living Mollusca from the same Expedition. *Brit. Assoc. Rep.* for 1877, *Sections*, p. 72. (Abstract.)

Fossils from raised beaches, all species now living.

Jones, T. R. Note on the Foraminifera and other Organisms in the Chalk of the Hebrides. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 739, 740; an appendix to Prof. Judd's paper (see p. 18).

——. Notes on some Fossil Bivalved Entomostraca. *Geol. Mag.* dec. ii. vol. v. pp. 100–110, pl. iii.

I. Descriptions of *Estheria Greyii*, a new species from the Karoo formation, S. Africa. II. On *E. Dawsoni* and others from the Carboniferous rocks. III. On some Triassic and other *Estheriæ*. IV. Descriptions of Ostracoda from Purbeck-Wealden beds of Shotover and elsewhere: these belong rather to *Cytheridæ* than to *Cypridæ*; and the following are new—*Candona Phillipsiana*, *Cypridea verrucosa*. V. Records of *Cypridea valdensis* and 2 others from Purbeck beds in the Sub-Wealden Boring. J. F. B.

——. On the Wealden Entomostraca. *Geol. Mag.* dec. ii. vol. v. p. 277.

Gives a full list, with corrections.

Kayser, Dr. E. Die Fauna der ältesten Devon-Ablagerungen des Harzes. [L. Devonian Fauna of the Harz.] *Abh. geol. Specialkarte Preussen*, Bd. ii. Heft 4, pp. xxiv, 296, and folio atlas of 36 pl.

Gives a bibliographical introduction, and describes the following new species:—

CRUSTACEA.

Proetus Richteri, P. wiedensis.
Phacops zorgensis.
Dalmanites Beyrichi.
Bronteus Rœmeri.

MOLLUSCA.

Orthoceras Losseni, O. Kochi, O. hercynicum, O. constrictum, O. Schillingi, O. ? lamelliferum, O. Beyrichi.
Capulus hercynicus, C. Halfari.
Platyostoma Giebeli.
Hercynella (n. gen.) Beyrichi, H. Hauchecorni.
Pleurotomaria depressa.
Loxonema Rœmeri.
Cardiola gigantea, C. minuta, C.? megaptera, C.? Groddecki, C.? hercynica.
Pseudaxinus viraginis.
Rhynchonella hercynica.
Spirifer Decheni, S. Ilsæ, S. excavatus.
Chonetes sericea, C. gibbosa.

ACTINOZOA.

Chætetes roemeri.

INCERTÆ SEDIS.

Pleurodictyum zorgense.

Concludes with a recapitulation, &c., containing much geological information, with the range of the species and a note on the determination of the geological horizon of the fauna. R. E., Jun.

Keeping, Walter. On *Pelanechinus*, a new Genus of Sea-urchins from the Coral Rag. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 924–930, pl. xxxiv.

A large urchin allied to *Echinothuria*, having flexible plates surrounding the oral aperture. It is the so-called *Hemipedina corallina* of Wright. J. F. B.

Koninck, Prof. L. G. de. [Fauna of Belgian Carboniferous Limestone. See p. 299.]

Genus *Nautilus*, pp. 77–146, pls. 9–31. The following are new species:—

N. crassiventer, N. distensus, N. atlantoideus, N. neglectus, N. eximius, N. prægravis, N. latisinuatus, N. implicatus, N. humilis, N. infundibulum, N. normalis, N. extensus, N. elephantinus, N. conspicuus, N. latiseptatus, N. bifrons, N. difficilis, N. exaratus, N. cordiostomus, N. lyriostomus, N. discoideus, and N. ornatissimus.

Some previously known *Nautili* are also figured and described.
R. E., Jun.

Koschinsky, C. Beiträge zur Kenntniss von *Terebratula vulgaris*, Schlot. *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 375–386, pl. xvi.

Gives details of the hinge and loop. Considers it undecided whether the species belongs to *Terebratula* or not.

Langenhan, A. Versteinerungen des Bunten Sandsteins, des Muschelkalks und Keupers in Thüringen. [Triassic Fossils of Thuringia.] 8vo. *Gotha.*

Lapworth, C. On the Graptolites of County Down. *Proc. Belfast*

Field Club, ser. 2, vol. i. pt. iv. Appendix iv. pp. 125-144, 3 plates.

Describes many Graptolites from carbonaceous Silurian shales, including a new species and two new varieties—*Monograptus lobiferus*, n. var. *pandus*, *M. M'Coyi*, n. sp., *Retiolites perlatus*, n. var. *Daironi*. E. T. N.

Linnarsson, G. On the Trilobites of the Shineton Shales. *Geol. Mag.* dec. ii. vol. v. p. 188.

Criticises some of the supposed relations of the Trilobites described by Dr. Callaway. See GEOLOGICAL RECORD for 1877, pp. 6, 302.

Loriol, P. de. Monographie des Crinoïdes fossiles de la Suisse. (Part II.) [Swiss Fossil Crinoids.] *Abh. schweiz. pal. Ges.* Bd. v. pp. 53-124, pls. 9-14. A continuation, see GEOLOGICAL RECORD for 1877, p. 315.

The new species are—*Millericrinus Escheri*, *M. Etalloni*, *M. Knorri*, *M. bernensis*, *M. valangiensis*, *M. Oosteri*, *Cyclocrinus Renevieri*, which are from the Sequanian or Valangian strata. J. F. B.

——. Monographie paléontologique des couches de la zone à *Ammonites tenuilobatus* de Baden. (Part III.) [Palæontology of the *A. tenuilobatus* Beds of Baden.] *Abh. schweiz. pal. Ges.* Bd. v. pp. 77-197, pls. xiii.-xxiii. A continuation, see GEOLOGICAL RECORD for 1877, pp. 315.

The new species are—*Aspidoceras Choffati*, *Turbo Mœschi*, *Pleurotomaria Mœschi*, *Alaria thermarum*, *Goniomya Mœschi*, *Neæra Fontannesii*, *Isoarca helvetica*, *Lima Mœschi*, *Pecten oromedon*, *Terebratula Zieteni*. J. F. B.

——. Notice sur le *Pentacrinus* de Sennecy-le-Grand. Pp. viii, 2, 14. (Entered without notice p. 87.) [See also GEOLOGICAL RECORD for 1877, p. 303.].

Describes *Pentacrinus Dargniesi*, Terquem and Jourdy, but figures it as *P. Chabasi*. It is allied to *P. briareus*; and Loriol is inclined to follow Austin in making these and similar forms a separate genus, *Extracrinus* P. H. C.

——. Description des Échinodermes. [Echinoderms from S.W. Crimea: see **E. Favre**, p. 65.] *Mém. Soc. Phys. Hist. Nat. Genève*, t. xxvi. pt. 1, pp. 73-83, plate.

Describes 9 species, the following being new:—*Holectypus Sinzovi* and *Psammechinus Trautscholdi*, Neocomian; *Hemiaster inkermanensis* and *Linthia Favrei*, U. Cretaceous; *Pentacrinus inkermanensis*, Miocene. W. H. D.

Lucas, Hippolyte. [On Coleoptera from Copal described by Dalman.] *Bull. Soc. Entom. France*, p. 75.

Gives list of species (of all orders) figured by Dalman, but omitted in 'Catalogus Coleopterorum,' Gemminger and Harold.

Ludwig, H. Beiträge zur Anatomie der Ophiuren. *Zeitschr. wiss. Zool.* Bd. xxxi. pp. 346–394, pls. xxiv.–xxvii.

The "genital clefts" lead into pouches which receive the genital ducts, serving both as marsupial pouches and as respiratory organs. In some species these pouches have plicated walls more or less supported by limestone plates, and closely resemble the hydrospires of the Blastoidea. P. H. C.

Lundgren, B. Studier öfver Faunan i den stenkölsförande Formationen i nordvestra Skåne. [Fauna of the Coal-bearing Rocks of N.W. Scania.] 2 pls. *K. Fysiogr. Sällsk. Min.*

Describes L. Lias fossils, the following being new:—An amphibian resembling a crocodile; of fish—

Saurichthys acuminata.
Semionotus Nilssoni.
Gyrolepis Alberti.
G. tenuistriatus.

of Mollusca—

Pecten janiformis.
Avicula Wilssoni, A. rectangularis, A. læviuscula.
Gervillia Angelini, G. lamellosa.
Mytilus geniculatus, M. guttæformis, M. acuminatus.
Protocardia suecica.
Tancredia Erdmanni.
Cyclas Nathorsti.
Cardinia Follini.
Pullastra Heberti.
Pholadomya elevato-punctata, P. expansa.
Myacites ovalis, M. elongatus.

Malfatti, G. Osservazioni sopra alcuni insetti fossili dell' ambra e del copale. [Observations on Fossil Insects in Amber and Copal.] *Atti Soc. Ital. Sci. Nat.* vol. xxi. pp. 181–195.

General account, list of species, bibliography.

Manzoni, Dr. A., and G. Mazzetti. Echinodermi nuovi della Molassa miocenica di Monteso nella Provincia di Modena. [New Echinoderms from the Miocene Molassa of Montese, Province of Modena.] *Atti Soc. Tosc. Sci. Nat.* vol. iii. fasc. 2., pp. 350–356, t. 19.

Describe *Hemipneustes italicus* and *Heterobrissus Montesi* as new.

Marsson, T. Die Foraminiferen der weissen Schreibkreide der Insel Rügen. [Chalk Foraminifera of Rügen.] *Mitth. nat. Ver. Neuvorpomm. Rügen*, Jahrg. x. 5 pls.

Matheron, Philippe. Recherches paléontologiques dans le midi de France, &c. [Palæontology of Central France.] Livr. 1, 2. Text ½ sheet of Part 15. Pls. B 15, 18, 20; C 8, 9, 11, 13, 14, 17–21; F 22; G 10. Fol. *Marseilles.* [See also *post* ADDENDA.]

The 4 pages of text aro on thc Tertiary stratigraphy. The plates give figures of the following new species (without descriptions):—

Natica Pellati, N. Pilleti, Pleurotomaria Heberti, P. elata, P. allaudiensis, P. Ardia, Ammonites eumorphe, A. gemmiferus, A. Antigona, A. stephanophorus, A. utriculus, A. Potieri, A. perinflatus, from the Neocomian.
Agria tetragona, A. mutans, A. abbreviata, A. pulchella, A. carinata, A.

Favrei, A. marticensis, Monopleura semicostata, M. multicarinata, M. Martini, M. affinis, M. Coquandi, M. procera, M. mutabilis, M. sulcata, M. Lorioli, M. incisifera, M. gracilis, Ethra Munieri, E. dubiosa, Natica Clio, Turritella Arnaudi, Eulima bulimoides, Pygnodus (*sic*) affinis: from the Urgonian.

Ammonites Soulieri, A. Boutini, A. perelegans, A. Piettei, A. assimilis, A. Œdipus: from the Barrémian.

Radiolites carinifera, R. semicostata, R. similis, R. Adansoni: from the Provencian.

Circe meridionalis, Ceromya marticensis, Panopæa provincialis, P. Martini, Pholadomya turgidula, Goniomya Agassizi, Psammobia Desori, Tapes Zitteli: from the Santonian.

J. F. B.

Mathews, Dr. John. On the History and Structure of Corals. *Journ. Quekett Club*, vol. v. pp. 105–119.

Alludes to fossil corals from near Llangollen.

Matyasowsky, J. V. Ein fossiler Spongit aus dem Karpathensandsteine von Kis-Lipnik im Sároser Comitate. [Fossil Sponge from the Carpathian Sandstone of Kis-Lipnik in Sáros County.] *Termész. Füz.* köt. ii. sz. iv.

Mayer, C. Description de Coquilles fossiles des terrains tertiaires supérieurs (Suite). [U. Tertiary Shells.] *Journ. Conchyl.* sér. 3, t. xviii. pp. 87–90, 175–183, pls. ii., iv.

Describes 13 species, 10 new, 3 renamed (marked †), viz.:—

MIOCENE.

Cerithium apenninicum (and Pliocene), Italy; C. bufoninum, Touraine; †C. Europæum (and Plioc.), Austria; †C. gallicum, France; C. galliculum, France; C. Girondicum, France; C. Lapugyense, Transylvania; C. Tournoueri, Touraine; †C. Turonicum, Touraine.

PLIOCENE.

Cerithium fraterculus, Austria; C. Isseli, Italy; C. Italicum, Italy; C. undatopictum, Italy.

W. H. D.

Mazyck, W. G., and A. W. Vogdes. Description of a new Fossil from the Cretaceous Beds of Charleston, U. S. A. *Proc. Ac. Nat. Sci. Philadel.* p. 272, woodcut.

Describe and figure *Anomia Andersonii*, n. sp.

Meneghini, —. Osservazioni sui Crinoidi terziarii. [Tertiary Crinoids.] *Proc. Verb. Soc. Tosc. Sci. Nat.* p. xxxi.

——. Due nuove specie di *Suessia*. [2 new *Suessiæ*.] *Ibid.* p. xxxii.

Meyer, C. J. A. Micrasters in the English Chalk. Two or more species? *Geol. Mag.* dec. ii. vol. v. pp. 115–117.

The position of the apical disc is correlated to the position of the mouth in specimens from different horizons, the latter being farther back as the former one is more forward. Concludes there are 6 or 7 species.

J. F. B.

Mickleborough, John, and A. G. Wetherby. A Classified List of Lower Silurian Fossils, Cincinnati Group. *Journ. Cincinn. Soc. Nat. Hist.* vol. i. pp. 61–86.

Names 477 species.

Miller, S. A. Description of a New Genus and Eleven New Species of Fossils, with remarks upon others well known, from the Cincinnati Group. *Journ. Cincinn. Soc. Nat. Hist.* vol. i. pp. 100–108, pl. iii.

The new genus is the internal cast of a Lamellibranch, and is called *Angellum cuneatum*; and the other new species are:—

Ptilodictya magnifica.
Palæaster longibrachiatus, P. Clarkei.
Glyptocrinus Dyeri, var. sublævis.
Cyrtolites magnus.
Murchisonia multigruma.
Ambonychia retrorsa.
Cyrtoceras amœnum.
Cythere irregularis.
Lichas Harrisi.
Pholidops cincinnatiensis.

Notes that the ventral valve of the last has a perforated foramen.

J. F. B.

——. Description of Eight New Species of *Holocystites* from the Niagara Group. *Journ. Cincinn. Soc. Nat. Hist.* vol i. pp. 129–136, pt. of plate.

From U. Silurian, Indiana: *H. Brauni*, *H. elegans*, *H. gibbosus*, *H. ornatus*, *H. plenus*, *H. prelongus*, *H. pustulosus*, and *H. Wetherbyi*.

Miller, S. A., and C. B. Dyer. Contributions to Palæontology. *Journ. Cincinn. Soc. Nat. Hist.* vol. i. no. 1, pp. 24–39, pls. i., ii., no. 2, pp. 11, 2 pls.

After 4 new plants, the following new species are described (mostly from the Cincinnati Group):—

Monticulipora calceolus.
Agelacrinus septembrachiatus.
Glyptocrinus angularis.
Palæaster simplex and P. spinulosus.
Palæasterina speciosa and P. approximata.
Protaster flexuosus.
Cyclocystoides magnus, minus, parvus, mundulus, bellulus.
Codaster pulchellus.
Eucalyptocrinus tuberculatus.
Microspongia (n. gen.) gregaria.
Spirifera Waldronensis.
Conularia formosa.
Spirorbis cincinnatiensis.
Walcottia (n. gen.) rugosa.

J. F. B.

Möbius, Dr. C. Der Bau des *Eozoon canadense* nach eigenen Untersuchungen verglichen mit dem Bau der Foraminiferen. *Palæontographica*, Bd. xxv. pp. 175–192, pls. xxiii.–xl.

Gives coloured drawings of decalcified specimens and thin sections. Concludes against the organic nature of Eozoon, on account of some differences in the general form of the "canal system" from that of true Foraminifera, and regards it as produced by intergrowth of chrysotile and serpentine.

J. F. B.

Möller, Prof. Valerian von. Die spiral-gewundenen Foraminiferen des russischen Kohlenkalks. [Spiral Foraminifera of the Russian Carboniferous Limestone.] *Mém. Ac. Imp. Sci. St. Pétersb.* sér. vii. t. xxv. no. 9, pp. ii, 147; 15 pls.

Introduction, history, synonymy, literature, mode of investigation, pp. 1–40. Description of 20 species in 8 genera [the following being new—*Fusulina Bocki*, *F. longissima*, *F. Verneuili*, *Hemifusulina Bocki*, *Bradyina* (n. gen.) *nautiliformis*, *Cribrospora* (n. gen.) *Panderi*, *Fusulinella Bocki*, *F. Bradyi*], pp. 40–119. Classification, Indices, &c., pp. 119–147. W. H. D.

Moesch, C. Zur Paläontologie des Sentisgebirges. Ueber einige neue und weniger bekannte Petrefakten aus der Kreide des Sentisgebirges. [Cretaceous Fossils from Sentis.] *Mat. Carte Géol. Suisse*, livr. 13, pp. 16; 3 plates.

Describes *Scaphites umbilicus*, *Nerinæa pseudorenauxiana*, *Ptygmatis Escheri*, *Itieria sentisiana*, *Tylostoma Escheri*, *Panopæa abbatiscellana*, and *Pecten Theobaldi* as new. J. F. B.

Morelet, A. Addition à la Faune paléontologique de l'île Maurice. [New Fossils from Mauritius.] *Journ. Conchyl.* sér. 3, t. xviii. pp. 170–173.

Pupa majuscula and *Helicina undulata*.

Morière, J. Note sur une Astéride fossile nouvelle trouvée dans l'Oxfordien des Vaches-Noires, entre Dives et Villers-sur-Mer. *Bull. Soc. Linn. Norm.* sér. 3, t. ii. pp. 75–82; 2 plates.

Considers the affinities of this new starfish, which is described as *Asterias Deslongchampsi*.

Morlet, L. Monographie du genre *Ringicula*, Deshayes, et descriptions de quelques espèces nouvelles. (Suite.) [Monograph of *Ringicula*.] *Journ. Conchyl.* sér. 3, t. xviii. pp. 251–295, pls. vi.–viii.

[The previous section deals with recent species only.]

48 fossil species are now described, 14 being new (including those of 1877, see *post*) and 4 (*R. incrassata*, *R. pyramidalis*, *R. simulata*, and *R. turgida*) are relegated to other genera. The new species are from France, Italy, Switzerland, Austria, Greece, and Algeria.

EOCENE.

R. Bezançoni, R. nana.

MIOCENE.

R. Bourgeoisi, R. elongata, R. Pauluccia, R. Fischeri, R. Sandbergeri, R. Baylei, R. Cacellensis, R. Crossei, R. Pontleviensis.

MIOCENE AND PLIOCENE.

R. Gaudryana, R. quadriplicata, R. Tournoueri.

PLIOCENE.

R. Africana.

W. H. D.

Neumayr, Dr. M. Ueber unvermittelt auftretende Cephalopodentypen im Jura Mittel-Europa's. [Appearance of non-successional Cephalopod Types in the Jurassic Rocks of Central Europe.] ^ *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 37–80.

Founds "Waag.": n. gen., for Aspidoceras hyb

Under the following heads :—1. Are there gaps in the stratigraphical succession of the Jura? 2. Deficient preservation of the faunas of individual zones. 3. How could form-succession be stopped? 4. Importance of the non-successional appearance of Cephalopodous types. 5. Sporadic appearance of species. 6. Details respecting the appearance of the non-successional types. 7. Their origin. The general conclusions are arrived at—that Propagation, Filiation, and Migration are amply sufficient to account for the whole Ammonite and Belemnite fauna of the Jurassic rocks of Central Europe, and that all the circumstances relating to these groups are in accord with the supposition of the Darwinian theory. G. A. L.

Neumayr, Dr. M. Ueber isolirte Cephalopodentypen im Jura Mitteleuropa's. [On isolated types of Cephalopods in the Jurassic rocks of Central Europe.] *Verh. k.-k. geol. Reichs.* p. 94.

Note foreshadowing the above paper.

Nicholson, Prof. H. A. On the Minute Structure of the Corals of the Genera *Heliophyllum* and *Crepidophyllum*. *Annals*, ser. 5, vol. i. pp. 44–54, woodcuts.

These genera were described in abstract in *Proc. R. Soc. Edin.* session 1875–76, the latter being new. Full descriptions are now given.

Nicholson, Prof. H. A., and R. Etheridge, Junr. A Monograph of the Silurian Fossils of the Girvan district in Ayrshire, with special reference to those contained in the Gray Collection. Fasc. I. *Rhizopoda*, *Actinozoa*, *Trilobita*. Pp. 135; 9 pls. 8vo. *Edinburgh* and *London*.

Give a bibliography and description of the Silurian fossils of the Girvan district, and establish the following new species :—

Girvanella (n. gen.) problematica (Rhizopoda).
Favosites Girvanensis, F. Mullochensis.
Fistulipora favosa, F. pilula.
Thecostegites Scoticus.
Pinacopora (n. gen.) Grayi (Actinozoa).
Stylaræa occidentalis.
Calostylus Lindströmi.
Streptelasma aggregatum.
Lindströmia (n. gen.) lævis (Actinozoa).
Dindymene (n. gen.) Cordai.
Lyopora (n. gen.) is founded for Palæopora favosa.

E. T. N.

Nicholson, Prof. H. A., and Dr. J. Murie. On the Minute Structure of *Stromatopora* and its Allies. *Journ. Linn. Soc. Zool.* vol. xiv. p. 187, pls. 1–4.

Give an epitome of previous views. Show *Stromatopora* to have been originally calcareous. The horizontal laminæ are not always porous, nor the vertical pillars usually tubular. There are 7 types of construction represented as generic, viz. *Stromatopora*, *Caunopora*, *Clathrodictyon* (with *C. vesiculosum* and *C. cellulosum*, n. gen. and sp.), *Stylodictyon retiforme* (n. gen. and sp.), *Stromatocerium canadense* (n. sp.), *Pachystroma antiqua* (n. gen. and sp.), and *Dictyostroma*. Consider them, with doubt, as a new section of calcareous sponges, called *Stromatoporoidea*. J. F. B.

Nikitin, S. Ammoniti Gruppi *Amaltheus funiferus*, Phill. *Bull. Soc. Imp. Nat. Mosc.* t. liii. pp. 81–159, pls. i., ii.

A. Elatmæ, *A. Rouilleri*, and *A. tuberculato-alternans* are new names for old species; and *A. rotundatus*, *A. tenuicostatus*, and *A. alternoides* are new Russian species. The generic characters of *Amaltheus* are given. W. H. D.

Norton, H. Notes on Species of *Hydrobia* from the freshwater beds of Runton and Mundesley. [Abstract.] *Proc. Norwich Geol. Soc.* vol. i. p. 16.

The specimens from the two localities belong to two species.

Novak, Ottomar. Fauna der Cyprisschiefer des Egerer Tertiärbeckens. [Fauna of the Cypris Slates of the Eger Tertiary Basin (Bohemia).] *Sitz. k. Ak. Wiss. Wien*, Bd. lxxvi. pp. 71–96, 3 pls.

Describes 19 insects and a *Daphnia*, all new species, viz.:—

Monanthia flexuosa.
Brachypelta rotundata.
Ligæus mytilus.
Neuropterites deperditus.
Bibiopsis Egerana, B. imperialis.
Bibio formosus, B. elegantulus.
Protomyia Bohemica.
Plecia quæsita.
Tipula angustata, T. expectans.
Ptychoptera deleta.
Sciara Martii.
Pheidologeton bohemicus.
Myrmica ? nebulosa.
Formica buphthalma.
Bombus crassipes.
Melolontha solitaria.

Daphnia atava. W. H. D.

Oberg, P. Om Trias-försteningar från Spetzbergen. [Trias Fossils from Spitzbergen]. 5 pls. 4to. *Stockholm.*

Oustalet, E. Réclamation sur une question de Nomenclature. [Question of Nomenclature.] *Ann. Soc. Entom. France*, t. v. pp. lx, lxi; *Bull. Sci. Dép. Nord*, sér. 2, t. i. pp. 105, 106. (Notes by **Giard** appended to the latter.)

Claims that *Plecia Oustaleti* (see **Brongniart**, p. 317) is a *Protomyia*, as originally named.

Painter, Rev. W. H. Fossil and recent Cephalopoda. *Midl. Nat.* vol. i. p. 142.

Peron, A. Observations sur la Faune des Calcaires à Echinides de Rennes-les-Bains et sur quelques Fossiles du terrain crétacé supérieur. *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 499–535, pl. vii.

Notices 1 Brachiopod, 1 Gasteropod, 1 Cephalopod, 16 Lamellibranchs, and 14 Echinids, including *Hemiaster Gauthieri*, n. sp. P. H. C

Peruzzi, —. Fossili nei Terreni Cretacei ed Eocenici di Toscana appartenenti al genere *Palæodictyon*. [Species of *Palæodictyon* from Tuscan Cretaceous and Tertiary Beds.] *Proc. Verb. Soc. Tosc. Sci. Nat.* p. xxx.

Pohlig, Hans. *Aspidura*, ein mesozoisches Ophiuridengenus. [*Aspidura*, a Mesozoic Ophiurid.] *Zeitschr. wiss. Zool.* Bd. xxxi. pp. 235–261; 2 pls.

Genus originally established by Agassiz for Triassic Ophiuroids from German Muschelkalk. Divided by the author into subgenera, *Amphiglypha* and *Hemiglypha*. Ranged under the *Ophiolepidæ* as intermediate between *Ophioglypha* and *Ophiopus*. Structure discussed, and relations to the Ophiuroidea generally considered. Present certain Asteroid affinities, the latter group being more primitive. W. P. S.

Quenstedt, A. F. Petrefactenkunde Deutschlands. Bd. vi. Korallen (Röhrencorallen), Heft 6, pp. 1–144, pls. 1–6. 8vo. *Leipzig.*

Describes Silurian corals from all parts of the world in a general way. Many new names are used; but the diagnoses are indistinct.

Rathbun, Richard. The Devonian Brachiopoda of the Province of Pará, Brazil. *Proc. Boston Soc. Nat. Hist.* vol. xx. pp. 14–39.

Gives a list of Devonian Brachiopoda from the Lower Amazon valley, of which the following are described as new:—

Lingula Ererensis.
Productella maccuruensis.
Chonetes Freitasii, C. curuaensis.
Orthis Hartii.
Spirifera Derbyi, S. Buarguiana, S. Hartii, S. maccuruensis.
Rhynchonella ererensis.

H. A. N.

Robins, C. E. The Fossil Insects of Colorado. *Kansas City Rev. Sci. Ind.* vol. ii. no. 5, p. 276.

Roth v. Telegd, L. Ein neues *Cardium* aus dem Congerienschichten. [New *Cardium* from the Congerian beds.] *Termész. Füz.* köt. ii. sz. i.

Describes and figures *C. cristagalli* from near O' Kurd, N. of Fünfkirchen.

Rouault, Marie. Notice préliminaire sur les Amorphozoaires du terrain silurien de la Bretagne. [Silurian Amorphozoa of Brittany.] (? *Journal de Rennes.*) Pp. 48. 8vo. *Rennes.*

Schlüter, Clemens. Ueber einige astylide Crinoiden. [Stemless Crinoids.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 28–66, pls. 1–4.

Fossil Comatulidæ. Describes their anatomy, and unites many genera to *Antedon*, of which the following are new species:—*A. essensensis*, *A. tourtiæ*, *A. semiglobosus*, *A. lettensis*, *A. lenticularis*, *A. sulcatus*, *A. concavus*, from Cretaceous rocks, and *A. italicus* from the Tertiary: besides which other forms are discussed. ii. On a Crinoid with its calyx enlarged on the under side, from the Eocene of Monte Spilecco—named *Cyathidium spileccense*. iii. *Uintacrinus westfalicus*, a stemless Crinoid. J. F. B.

Schlüter, Clemens. Cœlotrochium Decheni, eine Foraminifere aus dem Mitteldevon. [C. Decheni, a Foraminifer from M. Devonian.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 668–675, woodcut.

Describes this new species, from Gerolstein in the Eifel.

Schwager, Corrado. Nota su alcuni Foraminiferi nuovi del Tufo di Stretto presso Girgenti. [New Foraminifera from the Tuff of Stretto, near Girgenti.] *Boll. R. Com. Geol. Ital.* vol. ix. pp. 519–529, pl. i.

Describes and figures the following:—

Lagena ellipsoides.
Nodosaria Stöhri, N. Erbessina, N. clavulæformis, N. splendidula.
Glandulina extensa.
Marginulina limitanea, M. peronata.
Uvigerina baccalis.
Bulimina, sp.
Discorbina anomala, D. indistincta, D. Agrigentina.
Bolivina peregrina.
Reussia lævigata.
Chilostomella oolina.
Plecanium aratriforme.

Also the following from Astiano and Trubi:—

Bolivina cylindracea and Spiroloculina foliacea.

W. W.

Scudder, S. H. An account of some Insects of unusual interest from the Tertiary Rocks of Colorado and Wyoming. *Bull. U. S. Geol. Surv. Terr.* vol. iv. pp. 521–543.

Describes as new genera and species *Prodryas persephone* (Lepidopteron), *Palembolus florigerus* (Dipteron), *Parolamia rudis* (Coleopteron), *Petrolystra gigantea* and *P. heros* (Hemiptera), *Lithymnetes guttatus* (Orthopteron), *Dysagrion fredericii*, *Corydalites fecundus*, *Holcorpa maculosa* (Neuroptera), also some indusial cases, all from the Green River Group. W. H. D.

——. Fossil Insects of the Green River Shales. *Bull. U. S. Geol. Surv. Territories*, vol. iv. pp. 747–776.

Describes the following new species:—

HYMENOPTERA.

Lasius terreus.
Bracon laminarum.
Decatoma antiqua.

DIPTERA.

Diadocidia ? terricola.
Stenocinclis (n. gen.) anomala.
Milesia quadrata.
Cheilosia ampla.
Poliomyia (n. gen.) recta.
Sciomyza ? manca, S. ? disjecta.

COLEOPTERA.

Cychrus testeus.
Platymis senex.
Tropisternus saxialis, T. sculptilis.
Berosus tenuis, B. sexstriatus.
Laccobius elongatus.
Hydrobius decineratus.
Bledius adamus.
Anobium ? ovale, A. ? deceptum, A. lignitum.
Mycotretus binotata.
Cryptocephalus vetustus.
Eugnamptus decemsatus.
Ophryastes compactus.
Otiorhynchus dubius.
Eudiagogus terrosus.
Gymnetron LeContei.
Dryocætes carbonarius.
Cratoparis repertus, C. ? elusus.

HEMIPTERA.

Cyrtomenus concinnus,

Aethus punctulatus.
Cydnus ? mamillanus.
Rhyparochromus ? terreus.
Reduvius ? guttatus.
Acocephalus Adæ.
Fulgora ? granulosa.
Aphana rotundipennis.
Lystra ? Richardsoni.
Cixius ? hesperidum.
Lithopsis (n. gen.) fimbriata.

ORTHOPTERA.

Nemobius tertiarius.

NEUROPTERA.

Podagrion abortivum.

MYRIAPODA.

Iulus telluster.

W. H. D.

Scudder, S. H. The Early Types of Insects. *Mem. Boston Soc. Nat. Hist.* vol. iii. pp. 13–21.

A review of their succession, the most important points arrived at being that hexapods, arachnids, and myriapods appeared together in the Carboniferous strata. All Devonian and Carboniferous insects are Heterometabolar. The Metabola appear first in Jurassic times. The Palæozoïc Orthoptera are nearly all cockroaches. The Neuroptera were much rarer at that time than the lower Pseudoneuroptera. All early types were of inferior organization. E. T. N.

——. Note on the Wing of a Cockroach from the Carboniferous formation of Pillston, Penn. *Proc. Boston Soc. Nat. Hist.* vol. xix. pp. 238, 239. Reprinted in Scudder's Entomological Notes. 6, pp. 35, 36.

Describes *Blattina fascigera.*

——. An Insect-wing of extreme simplicity from the Coal Formation. *Proc. Boston Soc. Nat. Hist.* vol. xix. pp. 248, 249. Reprinted in *Scudder's Entomological Notes,* 6, pp. 37, 38.

The species is called *Euephemerites primordialis.*

——. *Rhachura,* a new genus of fossil Crustacea. *Proc. Boston Soc. Nat. Hist.* vol. xix. pp. 296–300, pl. 9. Reprinted in *Scudder's Entomological Notes,* 6, pp. 50–54, with same plate.

This species is called *R. venosa.*

——. A Carboniferous *Termes* from Illinois. *Proc. Boston Soc. Nat. Hist.* vol. xix. pp. 300, 301.

Found in a nodule, and called *T. contusus.*

——. Supplementary Note on Fossil Myriapods. *Mem. Boston Soc. Nat. Hist.* vol. ii. pp. 561, 562.

Description of figures illustrating a paper of 1873.

Smithe, F. Observations on the Opercula of some Silurian Gastropoda, &c. *Proc. Cotteswold Club,* vol. vii. pp. 62–71.

Figures and describes the opercula of *Euomphalus sculptus* from May Hill, and of a *Neritopsis.*

Sollas, Prof. W. J. On the Structure and Affinities of the Genus *Catagma. Annals,* ser. 5, vol. ii. pp. 353–364, pl. xiv.

Describes the minute structure of the sponges of this genus from Faringdon. The species are *C. (Manon) peziza, C. (Manon) macroporus,* *C.* (*Manon*) *porcatum*, and *C.* (*Manon*) *faringdonense*. *Tragos faringdonensis* and *Scyphia foraminosa* are also included in the family *Catagmidæ*. Though now calcareous, the sponges of the genus *Catagma* were originally siliceous, and owe their present condition to secondary metamorphosis. H. A. N.

Spencer, J. W. Graptolites of the Niagara Formation. *Canad. Nat.* n. s. vol. viii. no. 8, pp. 457–463.

Nine new species are described, all from the Niagara limestone at Hamilton, Ontario, viz.:—

Calyptograpsus (n. gen.) cyathiformis, C. subretiformis.
Rhizograpsus (n. gen.) bulbosus.
Acanthograpsus (n. gen.) Granti.
Thamnograpsus bartonensis.
Dictyonema tenella.
Inocaulis problematica.
Ptilograpsus foliaceus.
Callograpsus niagarensis.

J. F. B.

Stache, Dr. Guido. Beiträge zur Fauna der Bellerophonkalke Südtirols. [Fauna of the Bellerophon Limestone of S. Tyrol.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. pp. 93–168, plates iv.–vii. See also *Verh. k.-k. geol. Reichs.* pp. 104–108.

No. 2, containing the Pelecypoda and the Brachiopoda. The following are the new species described and figured:—

Hinnites crinifer.
Pecten (?Entolium) tirolense, P. (?Vola) præcursor, P. pardulus, P. (Aviculopecten) Trinkeri, P. (A.) comelicanus, P. (A.) Gümbeli.
? Avicula cingulata, ? A. striatocostata, A. fibrosa.
? Gervillia peracuta.
? Anthracosia ladina.
Pleurophorus Jacobi.
Allorisma tirolense.
Spirifera vultur, S. ladinus, S. insanus, S. megalotis, S. Haueri, S. cadoricus, S. dissectus, S. crux, ? S. (Spirigera) concors.
Spirigera sextensis, S. janiceps, S. papilio, S. aquilina, S. peracuta, S. bipartita, S. pusilla, S. confinalis, ? S. Archimedis, ? S. faba.
? Orthis ladina.
Streptorhynchus tirolensis, St. Pichleri.
Strophomena (Leptæna) alpina.
Productus cadoricus, P. Statteri.
Spirifera impar, from doubtful horizon.

G. A. L.

Stefani, C. de. Molluschi continentali fino ad ora notati in Italia nei Terreni Pliocenici ad ordinamento di questi ultimi. [Recently found Land-Mollusca of the Pliocene Strata of Italy.] *Atti Soc Tosc. Sci. Nat.* vol. iii. fasc. 2, pp. 274–325, t. 17–18. [A continuation, see GEOLOGICAL RECORD for 1876, p. 293.]

Gives an introduction to the Mollusca, and describes as new species:—*Pisidium Lawleyanum*, *P. Nardii*, *Sphærium bullatum*, *Neritina Pantanelli*, *Valvata anconæ*, *Melanopsis flammulata*, *M. oomorpha*, *M. Semperi*, *Melania Verrii*, *Pyrgula levissima*, *Emmericia umbra*, *E. Lottii*, *Stalioa acuta*. Founds a new genus *Neumayria* [adopted by Bayle for a Cephalopod, see p. 315] for *Bythinia labiata*. R. E., Jun.

Stefani, C. (or **A.**) **de**, and **Prof. D. Pantanelli.** Molluschi Pliocenici dei dintorno die Siena. (Continuazione.) [Pliocene Mollusca of the Neighbourhood of Siena.] *Bull. Soc. Mal. Ital.* vol. iv. pp. 215.

A descriptive catalogue of 521 species, of which the following are new:—

Lima Targioni.
Barbatia Mortilleti.
Scintilla bipartita.
Kellia peregrina.
Lucina Meneghinii.
Tapes Baldassarrii.
Psammobia Planci.
Eucharis cypricardina.
Sphenia lamellosa.
Sabatia utriculoides.
Atys Silvestrii, A. cannabis.
Zizyphinus simulans, Z. Lawleyi.
Cissotrema ausonia.
Opalia ridens.
Murex Campanii.
Eione Paretoi.
Nassa Tournoueri.
Columbella vittata.
Trigonostoma Bellardii.
Drillia Caturii, D. Monterosatoi.
Clathurella Malenæ.
Erato pieris.
Ovula Capellinii.
Capulus Forestii.
Cæcum Nysti, C. Monterosatoi.
Menestho craticulata.
Aclis Brugnoniana.
Turbonilla elongata, T. Strozzii, T. senensis, T. Mercati.
Potamides Gaudini.
Monophorus Bartolimi.
Alvania Euphrosyne, A. Thalia, A. Aglaja.

J. F. B.

Steinmann, Dr. Gustav. Ueber fossile Hydrozoen aus der Familie der Coryniden. [Fossil Hydrozoa.] *Palæontographica*, Bd. xxv. pp. 101–124, pls. xii.–xiv.

Recent and fossil forms are noticed, the following being new:—*Thalaminia*, n. gen. for U. Jurassic species (not new), Franconia and Neocomian, Yonne; *Sphæractinia* (n. gen.) *diceratina* and *Ellipsactinia* (n. gen.) *ellipsoidea*, Tithonian, Stramberg; *Cylindrohyphasma* (n. gen.) *Milaschewitschii*, Carboniferous Limestone, Moscow; *Porosphæra* (n. gen.), European Chalk. Also refers to this group the genera *Lobechia*, *Stromatopora* (including *Coscinopora* etc.), *Loftusia* and *Parkeria*, giving notes on each. E. T. N. and J. F. B.

Tate, Prof. R. The Fossil Marginellidæ of Australasia. *Trans. Adelaide Phil. Soc.* pp. 90–98.

Describes 18 species, the following being new; the first and ninth Eocene, the rest Miocene:—

Marginella Aldingæ, M. cassidiformis, M. muscarioides, M. hordeacea, M. micula, M. inermis, M. Winteri, M. Woodsi.
Erato australis, E. minor.

W. H. D.

Thomson, James. On a new Genus of Rugose Corals from the Carboniferous Limestone of Scotland. *Proc. Phil. Soc. Glasgow*, pp. 16; 3 pls.

Gives the results of a new method of indicating details of coral structure, and founds *Albertia* (n. gen.) with the new species *A. victoria regia*, *A. Argylli*, *A. Oweni*, *A. vesiculatus* (sic), *A. Lindströmi*, *A. irregularus* (sic), *A. depressa*, *A. intermedium* (sic), *A. subconicum* (sic).

J. F. B.

Thomson, James. On the Genus *Cyathaxonia* and several new species from the Carboniferous Limestone of Scotland. *Proc. Phil. Soc. Glasgow*, pp. 16; 3 pls.

Describes new species of small size, as *C. profunda*, *C. tortuosa*, *C. domiformis*, *C. Dibowskeyi*, *C. compressa*, *C. elegans*, *C. expansa*, *C. mammillata*, *C. Newburyi*, *C. robusta*, *C. Armstrongi*, *C. ejecta*, *C. granulata*, *C. cyathaminuta*, *C. spiralis*, *C. reticulata*, and 3 old ones. J. F. B.

Tomes, R. F. A List of the Madreporaria of Crickley Hill, Gloucestershire, with descriptions of some new species. *Geol. Mag.* dec. ii. vol. v. pp. 297–305.

Crickley Hill is a coral reef which has yielded 19 species, of which the following are new:—*Cyathophyllia oolitica*, *Isastræa expansa*, *Thecoseris polymorpha*, *Thamnastræa Fromenteli*. J. F. B.

Tournouër, R. Description d'une nouvelle espèce fossile de Corbicula des terrains tertiaires récents de la Grèce. [New *Corbicula* from Late Tertiary, Greece.] *Journ. Conchyl.* sér. 3, t. xviii. pp. 81–87.

C. Hellenica from U. Pliocene, Corinth.

Trautschold, —. Ueber *Camerospongia Auerbachi*, Eichw. *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 225–228, pl. ix.

Thinks it should be referred to the genus *Cœloptychium*, but gives no microscopic details.

Turner, H. Trilobites and their Modern Representatives. *Rep. Croydon Micr. Club*, p. 42.

Ulrich, E. O. Observations on Fossil Annelids and Descriptions of some new Forms. *Journ. Cincinn. Soc. Nat. Hist.* vol. i. pp. 87–91.

Impressions described as *Protoscolex covingtonensis*, *P. ornatum*, *P. tenuis*, *P. simplex*, and *Eotrophia setigera* considered as those of branchial tufts. All new genera and species. J. F. B.

——. Descriptions of some new Species of Fossils from the Cincinnati group. *Journ. Cincinn. Soc. Nat. Hist.* vol. i. pp. 92–100, pl. iv.

Describes *Anomaloides reticulatus* (n. gen. and sp.) of uncertain nature, consisting of parallel cylindrical bodies; also *Cellepora cincinnatiensis*, *Chætetes venustus*, *Ptilodictya perelegans*, *Protasterina* (n. gen.) *fimbriata*, *Discina tenuistriata*, *D. sublamellosa*, *Crania parallela*, *C. percariniata*, *C. socialis*, *Trinucleus bellulus*, all new. J. F. B.

Vine, G. R. Fossil Polyzoa. *Scientific Gossip*, no. 167, pp. 247–250; no. 168, pp. 274–276; 4 illustrations.

Gives an account of the genus *Fenestella*, its history, development, and range in space and time.

Vischniakoff, N. Observations sur la dernière loge de quelques Ammonitides de Russie. [Outer Chamber of certain Russian Ammonites.] *Bull. Soc. Imp. Nat. Mosc.* t. lii. pp. 39–54, pl. i.

The rarity of the preservation of the outer chamber in Ammonites is due to its want of the support which the septa give to the rest of the shell. Of only 4 Russian species is the outer chamber known, *A. subditus*, *A. kaschpuricus*, *A. Panderi*, and *A. virgatus*. The characters in these are described, and their classificatory importance indicated. W. H. D.

Vogdes, Lieut. A. W. A Monograph on the Genera *Zethus*, *Cybele*, *Encrinurus*, and *Cryptonymus*. Pp. 36; 4 pls. 8vo. *Charleston.*

Historical and descriptive. Describes 9 *Cryptonymi*, none being new.

Wachsmuth, Charles. Notes on the Internal and External Structure of Palæozoic Crinoids. *Annals*, ser. 5, vol. i. pp. 379–392, 453–463.

The arm-furrows, which have covering movable plates, lead by covered tubes to an internal mouth; the alimentary canal is a flattened spiral tube; the anus is often on a proboscis. From the constriction of the summit concludes that the Palæozoic crinoids, in which the actinal side is closed, represent the young stage of living crinoids, and proposes to call them *Palæocrinoidea*, a new suborder. J. F. B.

Wachsmuth, Charles, and Frank Springer. Transition forms in Crinoids and description of five new species. *Proc. Acad. Nat. Sci. Philadel.* pp. 224–266; with 2 plates.

The fossils described are from beds intermediate between the U. Burlington and Keokuk beds, and show intermediate characters. The majority are previously known and only discusssed; but *Eucladocrinus millebrachiatus*, *Platycrinus prænuntius*, *Ichthyocrinus nobilis*, *Cyathocrinus basidactylus*, and *C. Gilesii* are new. J. F. B.

Waters, A. W. Remarks on some Fenestellidæ. *Trans. Manch. Geol. Soc.* vol. xiv. p. 461, pl. 1.

Discusses the question whether the group belongs to the Bryozoa.

——. Bryozoa (Polyzoa) from the Pliocene of Bruccoli (Sicily). *Trans. Manch. Geol. Soc.* vol. xiv. p. 465, pl. ii.

Describes 41 species, of which 4 are said to be identical with Chalk forms, and *Lepralia auriculata* var. *leontinensis*, *Eschara lunaris*, *E. biaperta* var. *eschariformis*, *E. foliacea* var. *fascialis*, *Biflustra rhyncota*, *Frondipora reticulata* var. *verrucosa* are new. J. F. B.

White, Dr. C. A. Palæontological Papers. No. 6. Descriptions of New Species of Invertebrate Fossils from the Laramie Group. *Bull. U. S. Geol. Surv. Terr.* vol. iv. no. 3, pp. 707–719.

Describes the following new species from Colorado, Wyoming, and Utah:—

Volsella regularis, V. laticostata.
Nuculana inclara.
Anodonta parallela.
Unio goniambonatus, U. Aldrichii.
Corbicula Claburni, C. cardiniæformis, C. obesa, C. macropistha.
Acella Haldemani.
Physa felix.
Helix evanstonensis.
Neritina naticiformis, N. baptista.
Goniobasis Endlichi.
Viviparus prudentia, V. Couesi.
Odontobasis? formosa.

W. H. D.

White, Dr. C. A. Descriptions of new Species of Invertebrate Fossils from the Carboniferous and Upper Silurian rocks of Illinois and Indiana. *Proc. Acad. Nat. Sci. Philadel.* pp. 29–37.

The new species are:—*Baryphyllum fungulus*, a Silurian Coral; *Platycrinus Bonoensis*, *Scaphiocrinus Gibsoni*, *S. Gurleyi*, *Lepidesthes Colletti*, Subcarboniferous Echinoderms; *Ptilodictya triangulata*, *Astartella Gurleyi*, *Nautilus Danvillensis*, and *Serpula insita*, Carboniferous Mollusca and Annelid. J. F. B.

White, Dr. C. A., and Prof. H. A. Nicholson. Bibliography of North American Invertebrate Palæontology, being a report upon the Publications that have hitherto been made upon the Invertebrate Palæontology of North America, including the West Indies and Greenland. *Miscellaneous Publications U. S. Geol. Surv. Terr.* no. 10, pp. 132. 8vo. *Washington.*

Part I., by **Dr. White**, deals with works published in, and Part. II., by **Prof. Nicholson**, with those published out of the United States. A brief notice follows the majority of entries, which are arranged under the authors' names. W. H. D.

Whiteaves, J. F. On some Jurassic Fossils from the Coast Range of British Columbia. *Canad. Nat.* n. s. vol. viii. pp. 400–410; and, under a slightly different title, in *Rep. Geol. Surv. Canada* for 1876–77, pp. 150–159.

28 Mollusca and a species of *Serpula* are noted and more or less fully described; *Pinna subcancellata*, *Grammatodon? itasyoucoensis*, and *Trigonia Dawsoni* are new. H. A. N.

——. On some Primordial Fossils from South-eastern Newfoundland. *Amer. Journ.* ser. 3, vol. xvi. pp. 224–226.

Records some Trilobites from beds of the St. John's group, and describes as new *Lingula Billingsiana.*

Winkler, Dr. T. C. Troisième supplément au Catalogue systématique de la collection paléontologique. *Arch. Mus. Teyler,* vol. iv. fasc. 4.

Fossils from Neocomian rocks.

Woods, Rev. J. E. T. On some Australian Tertiary Corals. *Journ. R. Soc. N. S. Wales*, vol. xi. pp. 183–195, pls. 1, 2.

Describes the following new species from Muddy Creek, near Hamilton:—*Conocyathus cyclocostatus*, *C. fenestratus*, *Placotrochus elegans*, *Sphenotrochus variolaris*, *Smilotrochus vacuus*, *Conosmilia bicycla*; also *Calophyllia viola* and *Sphenotrochus excisus* are referred to the genus *Dictyocyathus*. R. E., Jun.

——. Census with brief descriptions of the Marine Shells of Tasmania and the adjacent islands. *Proc. R. S. Tasm.* for 1877, pp. 26–57.

Notes 4 species which are found fossil as well as recent.

——. On some Tertiary Fossils from New Guinea. *Proc. Linn. Soc. N. S. Wales*, vol. ii. pt. 3, pp. 267, 268.

Pecten novæguineæ is described as new; and other species are recorded.

——. On some Fossil Corals from Aldinga. *Proc. Adelaide Phil. Soc.* 1877–78, pp. 104–119, pls. i., ii.

The following are new:—*Deltocyathus aldingensis*, *D. Tateanus*, *D. alatus*, *Trochocyathus heterocostatus*, *Amphihelia striata*, *A. ziczac*, *Conosmilia contorta*, *Cyathosmilia laticostata*, *C. tenuicostata*, *Bistylia* (gen. nov.) *adherens*, *Cladocora contortilis*, *Plesiastræa sancti-vincenti*, the last being from the U. Aldinga series, the third from the U. Murravian, and the rest from the L. Aldinga. [See **Tate**, p. 183.] R. E., Jun., and W. H. D.

Woodward, Dr. Henry. Monograph of the British Fossil Crustacea belonging to the order Merostomata. Preface and Part V. pp. 181–245, pls. xxxi.–xxxvi. *Pal. Soc.*

Contains the suborder *Xiphosura*, the anatomy and embryology of *Limulus* being described, and the forms belonging to *Neolimulus*, *Bellinurus*, *Prestwichia*, and *Cyclus*, none being new. J. F. B.

——. On a new and undescribed Macrouran Decapod Crustacean from the Lower Lias, Barrow-on-Soar, Leicestershire, &c. *Geol. Mag.* dec. ii. vol. v. pp. 289–291, pl. vii.

Describes *Præatya scabrosa*, a genus nearly allied to *Atya*, living in S. America.

——. Notes on some Arctic Silurian or Devonian (?) Fossils from Beechey Island, brought home by the S.Y. "Pandora" in 1875, and from Port Dundas, Lancaster Sound, by an earlier expedition in 1853. *Geol. Mag.* dec. ii. vol. v. pp. 385–390, pl. x.

These have mostly been described by Salter in Sutherland's Journal, with the exception of *Alveolites*.

Woodward, Dr. Henry. Discovery of the Remains of a Fossil Crab (Decapoda-Brachyura) in the Coal Measures of the Environs of Mons, Belgium. *Geol. Mag.* dec. ii. vol. v. pp. 433–436, pl. xi., translated into French in *Bull. Ac. R. Belg.* t. xlv. pp. 410–415, plate.

The abdomen of a female, 12 millim. long, called *Brachypyge carbonis*, somewhat like a *Belinurus*, and the oldest Brachyure known.

——. On *Meyeria Willettii*, a new Macrourous Crustacean from the Chalk of Sussex. *Geol. Mag.* dec. ii. vol. v. pp. 556–558, woodcut; and *Dixon's Geology of Sussex*, pp. 379, 380, pl. xxxviii* [43]. See above, p. 10.

Wright, Joseph. Foraminifera Recent and Fossil, with special reference to those found in Ireland. *Proc. Belfast Nat. Soc.* 1877–78, pp. 22–27.

A general notice of the Foraminifera found in the Lias, in the inside of chalk flints, and in Boulder clay of the N. of Ireland.

Wright, Thomas. The Cretaceous Echinodermata. Vol. i. pt. viii. pp. 265–300, pls. lxii.-lxix. *Pal. Soc.*

Two species of *Epiaster*, of which *E. De Lorioli* is new, 3 of *Micraster*, 4 of *Echinospatangus*, of which *E. Renevieri* and *E. Quenstedtii* are new, 2 of *Enallaster*, and 4 of *Cardiaster* are described. The plates contain illustrations of some of these and of others. J. F. B.

——. British Fossil Echinodermata of the Oolitic Formations. Vol. i. Echinoidea. Index and Introduction. *Pal. Soc.*

——. Monograph of the Lias Ammonites of the British Islands. Part I. The Lias Formation. With 8 plates. *Pal. Soc.*

Commences the general description of the zones of the Lias from the base upwards. The plates give figures of previously described species.

Young, Prof. John, and John Young. On two new species of Carboniferous Polyzoa. *Proc. Nat. Hist. Soc. Glasgow*, vol. iv. pp. 354–356, pl. ii.

Glauconome robusta and *Synocladia ? scotica*, from the L. Carboniferous of W. Scotland.

Young, John. On *Chitonellus*, recent and fossil. *Proc. Nat. Hist. Soc. Glasgow*, vol. iv. pp. 322–324.

Records the presence of this genus in the L. Carboniferous rocks of Scotland, and gives a general account of its range.

——. Notes on some Calciferous Sandstone Fossils from the Head of Ayr. *Proc. Nat. Hist. Soc. Glasgow*, vol. iv. pp. 327–330.

Records fossils from the "cement stone series" of the L. Carboniferous in W. Scotland. In some specimens of *Spirorbis helicteres* there are curved calcareous septa. H. A. N.

Young, John. Note and Observations on injured or diseased Crinoids also some short notes on Fossils. *Proc. Nat. Hist. Soc. Glasgow*, vol. iv. pp. 334–340.

Describes the results of injury and repair on the stems of Crinoids, also of the growth of certain species of Polyzoa upon them. Notes are given on the structure of the tooth of *Petalodus Hastingiæ*. H. A. N.

Young, J. T. On the occurrence of a Freshwater Sponge in the Purbeck Limestone. *Geol. Mag.* dec. ii. vol. v. p. 220, woodcut.

Purbeck flints from Lulworth contain spicules like those of *Spongia fluviatilis*; and to these the name of *Spongilla Purbeckensis* is given.

Zittel, K. A. Studien über fossile Spongien. I. Hexactinellidæ. [Studies in Fossil Sponges.] *Abh. k. bay. Ak. Wiss.* Bd. xiii. Abth. i. pp. 1–63. See the GEOLOGICAL RECORD for 1877, p. 326.

——. Studien über fossile Spongien. II. Lithistidæ. *Abh. k. bay. Ak. Wiss.* Bd. xiii. Abth. i. pp. 67–154, pls. i.–x. *Annals*, ser. 5, vol. ii. pp. 113–135, 235–248, 324–341, 385–394, 467–482, pl. viii. *N. Jahrb.* pp. 561–618, pls. vii.–x.

Gives some details on the canal-system. Subdivides the Lithistids into families according to their skeletal elements:—*Tetracladina*, in which there are 4 branches making equal angles with each other; *Megamorina*, in which one branch is much larger than all the rest; *Anomocladina*, which have 4 to 7 irregularly dividing branches; and *Rhizomorina*, with minute filagree-like elements irregularly branching. The first of these contains the new genera *Phymatella*, *Aulaxinia*, *Callopegma*, *Trachysycon*, *Astrocladia*, *Calymmatina*, *Thecosiphonia*, *Racodiscula*, *Ragadinia*, *Plinthosella*, *Spongodiscus*, from the Cretaceous. The second contains the new genera *Megalithista* from the Jurassic; *Doryderma*, *Carterella*, *Isoraphinia*, *Heterostinia*, from the Cretaceous. The third, *Melonella*, *Cylindrophyma*, *Lecanella*, *Mastosia*, from the Jurassic: and the fourth, *Cnemidiastrum*, *Corallidium*, *Hyalotragos*, *Pyrgochonia*, *Discostroma*, *Epistomella*, *Leiodorella*, *Platychonia*, from the Jurassic; *Bolidium*, *Astrobolia*, *Chonella*, *Seliscothon*, *Verruculina*, *Amphithelion*, *Jereica*, *Cœlocorypha*, *Scytalia*, *Pachinion*, *Stachyspongia*, from the Cretaceous, and *Pomelia* from the Miocene. Concludes with an account of the distribution and habitat of the Lithistidæ. J. F. B.

——. Zur Stammes-Geschichte der Spongien. [History of Sponges.] Pp. 20. 4to. *Munich.*

Traces the geological history of each family of sponges.

Synopsis of Spanish Palæontology. *Boll. Com. Map. Geol. Españ.* t. v. 12 pls.

Jurassic series pls. 3–7, 11, 16, 17, 20, 22, 35, 37.

SUPPLEMENT FOR 1874–1877.

[**Anon.**] [Fossils of the Corallian of Glos.] *Bull. Soc. Linn. Norm.* sér. 3, t. i. p. 270. [1877.]
A list of the fossils.

Bar, C. Sur la *Breyeria borinensis*. *Ann. Soc. Entom. Belg.* t. xix. pp. liii, liv. [1876.]
Regards *Breyeria* as Homopterous.

Barrande, Joachim. Système Silurien du Centre de la Bohême. 1. Partie. Recherches Paléontologiques. Vol. II. Classe des Mollusques, Ordre des Céphalopodes. [Silurian Palæontology of Central Bohemia. Cephalopoda.] Parties 4, 5, supplément et Série tardive. Pp. lx, 1–742; xx, 743–1505, viii, 297, pls. 461–544. (4 vols.) 4to. *Prague* and *Paris*, 1877.

Continuation of a work begun in 1852; Part 3 noticed in the GEOLOGICAL RECORD for 1874, pp. 283–285.

Parts 4 and 5 contain a general account of the structure of the *Nautilidæ*, the curvature, the apical angle, the cross section, the body-chamber, the aperture, the chambers, truncation, the siphon, the vitreous or organic matter in siphon and in chambers, the lamellar structure of the shell and its ornamentation, the modes of locomotion, the arrangement of mineral infilling, the relation of the shell to the animal, and the embryological evidence of the initial chamber. The literature of these subjects is analyzed, the species possessing each characteristic given in frequent lists, their geographical and geological range, and their bearing on the evolution theory indicated.

The Supplement, &c. gives further particulars of many species, with descriptions, as new, of *Cyrtoceras* 89 species, *Gomphoceras* 7, *Nautilus insperatus*, *Gyroceras Fritschii*, *G. modicum*, *Mesoceras* (n. gen.) *Bohemicum*, *Orthoceras* 29, *Phragmoceras* 13, *Trochoceras* 3. [For specific names see INDEX OF NEW NAMES.]

In a postscript *Hyolithes Laubei* is described as an Addendum to vol. iii. Ptéropodes.

The closing table shows that vol. ii. (1867–1877) contains descriptions, from the Bohemian Silurians alone, of 1128 species belonging to 20 genera:—*Bactrites* 1, *Goniatites* 18, *Nothoceras* 1, *Bathmoceras* 2, *Adelphoceras* 2, *Cyrtoceras* 331, *Gomphoceras* 78, *Gyroceras* 10, *Hercoceras* 2, *Lituites* 1, *Ophidioceras* 6, *Mesoceras* 1, *Nautilus* 8, *Orthoceras* 554, *Endoceras* 3, *Phragmoceras* 47, *Tretoceras* 1, *Trochoceras* 49, *Ascoceras* 11, *Glossoceras* 2. W. H. D.

Cancel
see Errata
p. xxvi.

~~**Barrett, S. T.** Descriptions of New Species of Fossils, from the Upper Silurian Rocks of Port Jervis, N. Y.; with Notes on the occurrence of the Coralline Limestone at that Locality. *Ann. N. York Ac. Sci.* vol. i. nos. 3, 4, pp. 121–124.~~

~~*Discina Jervensis* from the Oriskany Group; *Trematis* (*Schizocrania*) *superincreta* from the L. Helderberg; *Receptaculites lateritius* from the Delthyris shale; *Diphyphyllum integumentum* from the Tentaculite Limestone. R. B. N.~~

Beyrich, —. Ueber jurassische Ammoniten von Mombassa. [Jurassic Ammonites from Mombassa.] *Monatsb. k. preuss. Ak. Wiss.* 1877, pp. 96–103.

Notes 7 species, of which *A. Hildebrandti* is new. Their European congeners are Kallovian and Kimeridgian.

Bölsche, Dr. W. Ueber die Gattung *Prestwichia*, H. Woodw., und ihr Vorkommen in der Steinkohlen-Formation des Piesberges bei Osnabrück. [*Prestwichia* in Osnabrück Carboniferous.] *Jahresb. nat. Ver. Osnabrück* for 1872–73, pp. 50–55. [1875.]

Note on this Xiphosarian genus.

——. [Ammonites arietiformis.] 3 *Jahresb. nat. Ver. Osnabr.* p. 44. [1876.]

——. Ueber einige Korallen aus der westphälischen Kreide. [Corals from the Westphalian Cretaceous.] 3 *Jahresb. nat. Ver. Osnabrück*, pp. 4. [1877.]

Describes 5 species—*Microbacia senoniensis*, *Cyclobacia Fromenteli*, and *Dimorphastræa Deickei* being new.

——. Beiträge zur Paläontologie der Juraformation im nordwestlichen Deutschland. [Palæontology of Jurassic Rocks of N.W. Germany.] 3 *Jahresb. nat. Ver. Osnabrück*, pp. 27. [1877.]

List, with remarks on L. and M. Jurassic species.

Böttger, Dr. O. Clausilienstudien. [Clausiliæ.] *Palæontographica*, Supplementband iii. Lief. 6, 7, pp. 1–122; 4 plates. [1877.]

After an introduction on the group generally, a number of species are reviewed, among which are the following new fossil species:—*Clausilia molassica*, M. Miocene? of Thun; *C. hassiaca*, M. Mioc. Offenbach; *C. recticosta*, L. Mioc. Frankfort; *E. plionecta*, M. Mioc. Offenbach; *C. moguntina*, M. Mioc. Mainz; *C. Kochi* and *C. collarifera*, L. Mioc. Hochheim; *C. perforata*, L. Mioc. Tuchoritz; *C. Clessini*, U. Mioc. Ratisbon; *C. ptycholarynx*, M. Mioc. Grussbach; *C. Schæfferina*, U. Mioc. Undorf; *C. gonyptyx*, M. Mioc. Grund; *C. Wetzleri*, L. Mioc. Thalfingen; *C. polyptyx*, M. Mioc. Grussbach; *C. undatistria*, U. Mioc. Mörsingen; and *C. oligogyra*, U. Eocene, Ronca. E. T. N.

Böttger, Dr. O. Fauna des ächten Cyrenenmergels von Sulzheim bei Wörrstadt. [Cyrena-Marl fauna, Mayence Basin.] *Notizbl. Ver. Erdk. Darmstadt*, Folg. 3, Heft 16, pp. 250–252. [1877.]

List of Rhizopoda, Annelids, Crustacea, Mollusca, and Fish.

——. [Tertiary Fauna, Swabia.] *N. Jahrb.* 1877, pp. 78–80.

Among the species mentioned, *Carychium suevicum*, *Pupa steinheimensis*, and *P. heterodus* are new, but not described.

Borre, A. P. de. [*Breyeria.*] *Ann. Soc. Entom. Belg.* t. xix. pp. 3, 4. [1876.]

Renewal of discussion as to its Lepidopterous character.

Bourguignat, J. R. Histoire des Clausilies de France vivantes et fossiles. [Recent and Fossil *Clausiliæ*, France.] *Ann. Sci. Nat.* t. v. no. 4, t. vi. no. 2. [1877.]

The species from the Eocene, Miocene, Pliocene, and Quaternary are considered; the following from the Quaternary are new:—*C. Gadueliana*, *C. Bizarellina*; a new genus is established, namely *Milne-Edwardsia*, to which several species are referred, *M. Barreri* being new. E. T. N.

Brongniart, C. [Perforated Fossil Wood from the Lottinghem Gault.] *Ann. Soc. Entom. France*, sér. 5, t. vi. pp. cxvii, cxviii. [1876.]

Refers the borer to *Bostrychus.*

Brugnone, A. J. Miscellanea Malacologia. Pt. i. pp. 14, pl.; Pt. ii. pp. 26, pl. 8vo. *Palermo*, 1873 and 1876. Price 5 francs.

The following new species of Pliocene fossils of Italy and Sicily are described:—

Mathilda tricincta.
Eulima piriformis, E. Carmelæ.
Odostomia Michaelis, O. nisoides, O. macella, O. Bulimulus, O. incerta, O. nana, O. pistillus.
Lachesis recondita.
Pleurotoma lanceola.
Ringicula leptocheila.
Solarium nuperrimum.
Natica præsolida.
Gastrana abbreviata.
Sportella sinuata.
Scacchia exigua, S. concava.
Montacuta tumescens, M. maxima.
Leda Erctensis.
Yoldia striolata.
Capulus pusillus.
Fissurella latecostata.
Brocchia laciniata, B. simplex.
Odostomia ovulum, O. plebeja, O. heterophana, O. crebrilirata, O. acliformis.
Scalaria Turbonilla, S. mesogonia.
Littorina dubia.
Cyclostrema curvistriatum.
Fusus subaciculatus.
Pollia rudissima.
Triton torulosum.
Dentalium brevifissum, D. fusticulus.
Siphonodentalium hyalinum.
Rissoa Ficaratiensis.

W. H. D.

Brusina, Spiridion. Prilozi paleontologiji Hrvatskoj ili Kopnene i slavkovodne terciarne izkopine Dalmacije Hrvatske i Slavonije. [Tertiary Palæontology of Dalmatia, Croatia, and Slavonia.] *Rad*

Jugoslav. Akad. Znan. Umiej. Knj. xxviii. [1874]. The original of the memoir entered in the Geological Record for 1874, p. 289.

Brusina, Spiridion. Fragmenta Vindobonensia. [Viennese Fossils.] *Journ. Conchyl.* sér. 3, t. xvii. pp. 368–391. [1877.]

Remarks on several species. The new names *Cypræa Lanciæ*, *Marginella Hörnesi*, and *Raphitoma perforata* are proposed for shells wrongly identified in earlier works. Latin diagnoses are quoted from the Croatian '*Viestnik*,' 1870, of *Bittium multiliratum*, *Cerithiopsis Hörnesi*, *Triphoris myriococcus*, *Mathilda Semperi*, and *Planaxis? Auingeri*. **Baron Schwartz** describes *Alvania Brusinai*, n. sp. W. H. D.

Cooper, Dr. J. G. The Origin of Californian Land-shells. *Proc. Calif. Ac. Sci.* vol. vi. pp. 12–14. [1876.]

States that land shells form most important evidences of geological changes and conditions of the land, climate, &c. in the past history of the globe. R. B. N.

——. On Shells of the West Slope of North America. *Proc. Calif. Ac. Sci.* vol. vi. pp. 14–27. [1876.]

"The angled form of *Helix Kellettii*, found fossil, is the link connecting our *Arionta*-form species with the *Chilotrema*-form *H. lapicida*."

Cornet, F. L., and A. Briart. Description des Gastéropodes fossiles du Calcaire grossier de Mons. Pt. ii. 4to. *Brussels*, 1874.

Cotteau, G. Sur le genre Tetracidaris. 8vo. *Paris*, 1874.

——. Echinides tertiaires des îles Saint-Barthélemy et d'Anguilla. [Tertiary Echinida of W. Indies.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 126–132. [1877.]

Analysis of the work noticed in the Geological Record for 1876, p. 354. The new species there listed are divided between Eocene and Miocene, the following being Eocene—*Agassizia* (also Mioc.), *Cidaris Loveni*, *Echinanthus*, *Echinolampas Antillarum* and *Clevei*, *Euspatangus*, *Periaster*, *Peripneustes Antillarum*, *Plagionotus*, *Prenaster*, *Schizaster Antillarum*, *S. subcylindricus*, and *Sismondia Antillarum*. The rest are Miocene, except *Breynia*, *Brissopsis Jimenoi*, *Clypeaster cubensis*, and *Macropneustes*, Cuban species, age not given in this analysis. W. H. D.

Dalmer, C. Die ost-thüringischen Encriniten. Mit einem Vorworte von **E. E. Schmid.** [Encrinites of E. Thuringia.] *Jen. Zeitsch. Nat.* Bd. xi. pp. 382–402, Taf. xxiii. [1877.]

Describes a series of individuals from the L. Muschelkalk which vary greatly, but are referable to *Encrinus Carualli*. They differ from the type in the arms being composed of a single row of joints. A partial duplication occurs in Beyrich's type; but no *Encrinus* species of the L. Muschelkalk has a complete double row of arm-joints like *E. liliiformis*. P. H. C.

Dames, W. Eine Echinidenfauna von der Insel Melos. [Echinidæ from Melos.] *Sitz. Ges. nat. Freunde Berlin*, 1877, pp. 234–236.
Notes 8 species (Quaternary), *Cidaris multimammata*, n. sp., being described. Their range fossil and recent is noted.

Daudet, Henri. Chenilles fossiles. [Fossil Caterpillars.] *Petites Nouvelles Entom.* t. ii. p. 25. [1876.]

——. Description d'une Chenille fossile trouvée dans le calcaire d'Aix (Provence). [Fossil Caterpillar in the Aix Limestone.] *Rev. Mag. Zool.* sér. 3, t. iv. pp. 415–424, pl. xvii. [1876.]
Describes *Satyrites incertus*, the first fossil caterpillar of a butterfly known.

Dybowski, W. Die Chätetiden der ostbaltische Silur-Formation; zur Kenntniss mikroskopischen fossilen Korallen. [The Chætetidæ of the East Baltic Silurian: Microscopic Fossil Corals.] 4 pls. 4to. *St. Petersburg*, 1877.

Fischer, P. Diagnoses *Molluscorum* in stratis fossiliferis insulæ Rhodi jacentium. [Fossil Mollusca of Rhodes.] *Journ. Conchyl.* sér. 3, t. xvii. pp. 77–81, 222, 223. [1877.]

Cardita Rhodiensis,
Trochus Prusi, T. bullula,
Erato gigantula,
Rissoa Monterosatoi, R. Prusi,
Cerithium Rhodiense,
Odostomia clavulina,
Hydrobia regina,
Mangelia myrmido,

are described, all new species. W. H. D.

——, **G. Cotteau, A. Manzoni,** and — **Tournouër.** Paléontologie des Terrains Tertiaires de l'Ile de Rhodes. [Tertiary Palæontology of Rhodes.] *Mém. Soc. Géol. France*, sér. 3, t. i. no. 2, pp. 74, pls. iii.–v. [1877.]
Cotteau remarks on the Echinodermata.
Fischer enumerates 314 Pliocene Mollusca, repeating his descriptions of new species from *Journ. Conch.* 1877, and proposing that *T. obscurus*, Desh., should be renamed *T. renovatus* (*obscurus* being preoccupied).
Tournouër notes the freshwater Tertiary shells (15), describing *Hydrobia Rhodiensis* as new.
Manzoni notes or remarks upon 63 Bryozoa. W. H. D.

Ford, S. W. Note on *Microdiscus speciosus*. *Amer. Journ.* ser. 3, vol. xiii. pp. 141, 142. [1877.]
Fresh specimens show that this species has only 3 body-segments.

Foresti, Dr. L. Note sur une nouvelle espèce de *Cerithium* de l'éocène du Bassin de Paris. [New Eocene *Cerithium*, Paris Basin.] *Journ. Conchyl.* sér. 3, t. xvii. pp. 219–222, pl. iv. fig. 3. [1877.]
Describes *C. Ranzanii*.

Foresti, Dr. L. Specie nuova *Cardium Verrii*, Foresti. [New *Cardium*.] *Bull. Soc. Mal. Ital.* vol. iii. pp. 4, pl. [1877.]

From Pliocene, Val di Chiana.

Fritsch, K. v. Die Echiniden der Nummuliten-Bildungen von Borneo. [Nummulitic Echini, Borneo.] *Palæontographica*, Suppl.-Bd. iii. Lief. i. Heft ii. pp. 85–92, pl. xiii. [1877.]

From the Kalksteinetage E: 3 new species of *Cidaris*, based on the characters of the spines only, viz. *C. acanthica*, *C. Janus*, *C. longicollis*, and imperfect tests of *Clypeaster phyllodes*, n. sp., and *Echinolampas dispar*, n. sp. From the Krebsmergel: *Verbeekia dubia*, n. gen. and sp. of Spatangoida. P. H. C.

Fromentel, —. Paléontologie Française. Sér. I. Animaux Invertébrés. Terrain Crétacé. T. viii. Livr. 27. Zoophytes. Pp. 433–480, pls. 109–120. [1877.]

The following appear to be new species:—

Rhabdocora exiguis.
Rhipidogyra Turonensis.
Dendrogyra Dumortieri.
Pachygyra Orbignyi.
Chorisastræa Neocomiensis.
Latimeandra media, L. plana, L. Dumortieri, L. duplex.
Stylomeandra regularis.
Mæandrastræa plana.
Latiphyllia Neocomiensis.
Glyphiphyllia Dumortieri, G. flabellata, G. excelsa.
Hydnophora Ferryi, H. digitata.

E. T. N.

Fuchs, Theodor. Die Mollusken. Part i. of Cap. xxiv. of Karrer's work on the Geology of the High-level Aqueduct, Vienna, noticed in the GEOLOGICAL RECORD for 1877, p. 76. *Abh. k.-k. geol. Reichs.* Bd. ix. pp. 367–370, pl. 16. [1877.]

Describes and figures the following new Tertiary species:—*Ancillaria pusilla*, *Fasciolaria recticauda*, *Fusus immaturus*, *Pecten Felderi*, *P. Sivringensis.* W. H. D.

Gemmellaro, G. Prima appendice a gli Studi paleontologici della fauna del Calcario a *Terebratula Janitor* del Nord di Sicilia. Pesci, Crostacei, Molluschi, Echinodermi. [Appendix to Palæontology of *T. Janitor* Limestone of N. Sicily.] *Atti Ac. Gioen. Sci. Nat.* ser. 3, t. xii. pp. 99–109, pl. A. [1877.] See GEOLOGICAL RECORD for 1876, p. 277.

Describes the new species *Cerithium Bellini*, *C. puritanorum*, *C. pirata*, *Itieria norma*, *Nerinæa Julietta*, *N. somnambula*, *N. straniera*, *Trochotoma beatrix.* J. F. B.

Giard, Alfred. Un papillon dans la houille; note de M. Preudhomme de Borre. *Bull. Sci. Hist. Litt. Nord*, ann. 7, pp. 121–127. [1875.]

Discusses *Breyeria*, regarding it as of the Archiptera and not Lepidopterous.

Giard, Alfred. Note sur un diptère nouveau pour la faune française (*Penthetria holosericea*, Meig.) suivie de quelques remarques sur les bibionides fossiles. [New French Fly, with remarks on Fossil Bibionidæ.] *Bull. Sci. Hist. Litt. Nord*, ann. 8, pp. 172-178. [1876.]

Discusses *Penthetria Vaillantii*, Oustalet, from Auvergne; continued in 1878, see above, p. 327.

G[irard] M[aurice]. Les Articulés fossiles. *La Nature*, t. v. pp. 301, 302. [1877.]

Notices of Brongniart's recent papers.

Gourdon, —. Remarques sur les *Rudistes* de Rennes-les-Bains (Aude). [*Rudistes* of Rennes-les-Bains.] *Bull. Soc. Hist. nat. Toulouse*, t. x. no. 3, p. 170. [1876.]

Gümbel, Dr. C. W. Ueber die Natur von *Eozoon*. [Nature of *Eozoon*.] *Corr.-Blatt zool.-min. Ver. Regensburg*, Jahrg. xxx. pp. 178-180. [1876.]

Guiscardi, G. Sui i Crinoidi del periode terziarie. [Tertiary Crinoids.] *Rend. R. Ac. Sci. Napoli*, ann. xiii. fasc. 11, pp. 165-169. [1874.]

Describes 6 varieties of *Pentacrinus*-stem from Nummulitic beds, one of them like *P. didactylus*; also calices of *Bourgueticrinus* from Biarritz and Bos d'Arros, near Pau. Records *B. Thorenti* in the L. Nummulitic of Valdague, and near Termini, Sicily. P. H. C.

Halavats, —. [Mediterranean Fauna of U. Lapugy.] *Földt. Közl.* vol. vi. [1876.]

Horn, G. H. Notes on some Coleopterous Remains from the Bone Cave at Port Kennedy, Pennsylvania. *Trans. Amer. Ent. Soc.* vol. v. pp. 241-245. [1876.]

11 species described.

Jones, T. R., and W. K. Parker. Note sur les Foraminifères Vivants et Fossiles de la Jamaïque, suivie de la Description d'une Espèce Nouvelle des Couches Miocènes de la Jamaïque par **H. B. Brady**. [Recent and Fossil Foraminifera of Jamaica, with a new Miocene Species.] *Ann. Soc. Mal. Belg.* t. xi. pp. 91-103. [1877.]

Lists of Tertiary Foraminifera. Description of *Tinoporus pilaris*, n. sp.

Jukes-Browne, A. J. Supplementary Notes on the Fauna of the Cambridge Greensand. *Quart. Journ. Geol. Soc.* vol. xxxiii. pp. 485-504, pl. xxi. [1877.]

Remarks on the caution requisite in instituting new specific names, and revises the list of "Greensand" fossils, cancelling 17 names as wrongly entered, and adding 16 names (4 new species, which are described and figured), and 12 new identifications with Continental or British species. The new names are *Turrilites nobilis*, *Natica levistriata*, *Nerita nodulosa*, and *Lima interlineata*. A new *Nautilus* is described, but no specific name given. W. H. D.

Karrer, F. Die Foraminiferen. [Part of cap. xxiv. of work on the Geology of the High-level Aqueduct, Vienna, noticed in the GEOLOGICAL RECORD for 1877, p. 76.] *Abh. k.-k. geol. Reichs.* Bd. ix. pp. 370–388, pls. 16*a*, 16*b*. [1877.]

Describes the following new Foraminifera from the Miocene:—

Stylolina Lapugyensis.
Ammodiscus miocenicus.
Trochammina miocenica.
Clavulina cylindrica.
Bigenerina ampla.
Gaudryina prælonga.
Biloculina Grinzingensis, B. plana.
Spiroloculina Berchtoldsdorfensis.
Quinqueloculina sarmatica.
Vertebralina sarmatica.
Dactyloporella miocenica.
Lagena Mariæ, L. Grinzingensis, L. Bittneri.
Fissurina Bouéi, F. multicosta.
Nodosaria columella, N. Knihnitziana.
Psecadium Nussdorfense.
Frondicularia Bradyana, F. Medelingensis, F. semicosta, F. interrupta, F. raricosta, F. superba, F. sculpta, vars. seminuda and parvinuclea.
Flabellina cristellaroides, F. Jonesi.
Cristellaria humilis, C. spinulosa, C. mirabilis, C. ampla, C. italica, var. cincta, C. aureola, C. obesa, C. Paulæ, C. Helena.
Polymorphina Schwageri, P. gigas, P. amœna, P. horrida, P. asperella.
Uvigerina cochlearis, U. Brunnensis, U. Parkeri.
Schizophora Neugeboreni.
Cassidulina Margareta.
Discorbina Badensis, D. globularis, D. lucida.
Rotalia Berchtoldsdorfensis.
Calcarina Carpenteri.
Tinoporus Fuchsi.

W. H. D.

Kent, W. S. M. K. A. Zittel on Fossil Hexactinellida. *Annals*, ser. 4, vol. xx. p. 446. [1877.]

Corrects a mistake in Zittel's diagnosis of Kent's scheme (1870) for the natural division of Hexactinellid sponges.

Kirby, W. F. A Synonymic Catalogue of Diurnal Lepidoptera. Pp. vii, 690. 8vo. *London*, 1871. Supplement, March 1871—June 1877. Pp. vii, 691–883. 8vo. *London*, 1877.

Includes fossil species.

[**Koch, Dr. Antal.**] A Csicsó-hegymasi patak kövületek. [Fossils from Mt. Csicsó, Transylvania.] *Evkön. Erdél Muz.-Egyl.* köt. iii. sz. 4, p. 54. [1876.]

Kokán, J. [Two Interesting Fossils from Arpad.] *Földt. közl.* köt. iv. [1874.]

Koninck, Prof. L. G. de. Notice sur quelques fossiles recueillis par G. Dewalque dans le Système Gedinnien de A. Dumont. [Gedinnian (L. Devonian) Fossils.] *Ann. Soc. Géol. Belg.* t. iii. pp. 25–52, pl. i. [1876.]

Describes and figures the following new species and 4 previously known species from Gedoumont and Mondrepuits, S.E. Belgium:—

Cystiphyllum profundum.
Primitia Jonesii.
Beyrichia Richteri.
Homalonotus Roemeri.
Chonetes Omaliana.
Strophomena rigida.
Orthis Verneuili.
Rhynchonella æquicostata.
Spirifer dumontianus.
Grammysia deornata.
Avicula subcrenata.
Pterinea? ovalis.
Tentaculites irregularis.

W. H. D.

Lahusen, —. Obe okamenyelostyache Simbirskoe glini. [Fossils of the Simbirsk Clays (Cretaceous).] *Zapiski St. Peterb. Min. Obsch.* n. F. Bd. ix. p. 69. [1874.]

Lartigue, —. [Fossil Wood from Gault, Lottinghen.] *Ann. Soc. Entom. France*, sér. 5, t. 6, p. cvii. [1876.]
Perforated by insects, see **Brongniart**, p. 353.

Lefèvre, T. [*Rostellaria robusta*, Rutot.] *Proc.-verb. Soc. Mal. Belg.* t. vi. p. ci. [1877.]
Regards it as inseparable from *R. ampla*.

Lóczy, Lajós. Néhány Echinoida a Fehérkörösvölgy Neogenrétegeiböl. [Neogene Echini from the White Koros Valley.] *Termész. Füz.* Bd. i. pt. 1, pp. 39-44 (German, pp. 62-67), pl. v. [1877.]
Describes, amongst others, *Echinocardium intermedium*, n. sp. Title incorrectly printed in the GEOLOGICAL RECORD for 1877, p. 315.

Lubbock, Sir John. On the Origin and Metamorphoses of Insects, Pp. xvi, 108. 16mo. *London*, 1874.
Refers to the geological appearances of the several orders.

M'Coy, Prof. F. Prodromus of the Palæontology of Victoria; or figures and descriptions of Victorian organic remains. Decade v. 8vo. *Melbourne* and *London*, unpaged, plates xli.-l., 1877.
Describes the skull of *Arctocephalus Williamsi*, n. sp., and the following new Invertebrate fossils:—*Waldheimia corioensis*, *W. macropora*, *Cardium pseudomagnum*, *Protocardium anti-semigranulatum*, *Spondylus pseudo-radula*, *Tethya Newberyi*, *Graphularia Robinæ*, *Cypræa leptorhyncha*, *C. consobrina*, *C. contusa*, from Tertiary beds. *Trematospira liopleura*, *Nucleospira australis*, *Pentamerus australis*, *Didymograpsus Thureaui*, from the Silurian. R. E., Jun.

M'Lachlan, R. Note sur l'insecte fossile décrit par M. P. de Borre sous le nom de *Breyeria borinensis*. [On de Borre's Fossil Insect *Breyeria*.] *Ann. Soc. Entom. Belg.* t. xx. pp. 36, 37. [1877.]
Regards it as an Ephemerid.

Manzoni, Dr. A. I. Briozoi Fossili del Miocene d'Austria ed Ungheria. Parte II. Celleporidea, Escharidea, Vincularidea, Selenaridea. [Miocene Bryozoa, Austria and Hungary.] *Denkschr. k. Ak. Wiss. Wien*, Bd. xxxvii. Abth. 2, pp. 49–78, 17 pls. [1877.]

A continuation of the late **Prof. Reuss's** work (see the Geological Record for 1876, p. 348), whose MSS. are worked in. 51 species (in 12 genera) are described and figured, the following being new (R. = Reuss, MS.):—*Celleporaria crassa*, *C. aviculifera*, *Cumulipora transylvanica*, R., *Hemieschara porosa*, R., *H. marginata*, R., *H.? tubigera*, *Eschara chiragra*, R., *E. expansa*, R., *E. filisparsa*, *E. stipitata*, R., *E. delicata*, *E. formosa*, *E. minax*, *E. neglecta*, *E. oculata*, *E. flabellaris*, *E. patula*, *Biflustra contabulata*, R., *Flustrellaria autoctona*, R., and *Vincularia binotata*, R. The conclusion of the work, dated 1878, is noticed by mistake in the Geological Record for 1877, p. 315. W. H. D.

Martin, C. Ueber die Organisation von Astylospongia und über die Wallsteine. Pl. 8vo. *Neubrandenburg*, 1877.

Meek, F. B. Description of *Pleurotomaria Taggarti*, Meek. *Ann. Rep. U. S. Geol. Surv. Terr.* for 1873. [1874.] P. 231.

A new species allied to *Pleurotomaria missouriensis* is here described in a footnote.

Michaud, G. Description des coquilles fossiles découvertes dans les environs de Hauterive (Drôme). [Fossil Shells of Hauterive.] Ed. 2. Pp. 31 ; 2 pls. 8vo. *Lyons*, 1876.

Nothing different from the first edition.

Möller, V. von. Ueber Fusulinen und ähnliche Foraminiferen-Formen des russischen Kohlenkalkes. [*Fusulina* and similar Foraminifera from the Russian Carboniferous Limestone.] *N. Jahrb.* 1877, pp. 139–146.

Divides the family into *Fusulina*, and the new genera *Schwagerina*, *Hemifusulina*, and *Fusulinella*.

Morlet, L. Diagnoses specierum fossilium novarum ad genus *Ringiculam* pertinentium. [New Fossil *Ringiculæ*.] *Journ. Conchyl.* sér. 3, t. xvii. pp. 365–367. [1877.]

Describes (in Latin) *R. quadriplicata*, Plioc. & Mioc., Italy and Austria ; *R. Fischeri*, Mioc., Transylvania ; *R. elongata*, Mioc., Lisbon; *R. Baylei*, Mioc., Dax ; *R. Tournoueri*, Mioc., Gironde ; *R. nana*, Eoc., Pyrenees ; *R. Bezanconi*, Eoc., Seine-et-Oise. W. H. D.

Neugeboren, J. L. Systematisches Verzeichniss der in den Miocänschichten bei Ober-Lapugy in Siebenbürgen vorkommenden fossilen Korallen. [List of Miocene Corals from Upper Lapugy, in Transylvania.] *Mitth. siebenb. Ver. Nat. Hermannstadt*, Bd. xxvii. p. 41. [1877.]

Novák, Ottomar. Beitrag zur Kenntniss der Bryozoen der böhmischen Kreideformation. [Cretaceous Bryozoa, Bohemia.] *Denkschr. k. Ak. Wiss. Wien*, Bd. xxxvii. Abth. 2, pp. 72–126; 10 pls. [1877.]

45 species are described, their range in the Cenomanian, Turonian, and Senonian being shown by a table. The new species are:—

Hippothoa labiata, H. desiderata.
Membranipora curta, M. perisparsa, M. subovata, M. tuberosa.
Lepralia euglypha.
Biflustra Prazáki, B. solea.
Semieschara teres.
Berenicea folium, B. lacrimopora, B. pilosa, B. radians.
Diastopora acupunctata.
Stomatopora simplicissima.
Proboscina Bohemica, P. diffluens, P. linguata, P. intermedia, P. Suessi.
Entalophora anomalissima, E. fecunda, E. Kolinensis.
Melicertites docens.
Multelea orphanus.
Osculipora plebeia.
Truncatula tenuis.
Heteropora foraminulenta, H. Korycanensis, H. lepida, H. magnifica.
Petalopora seriata.

W. H. D.

Oustalet, Emile. Recherches sur les insectes fossiles des terrains tertiaires de la France. Thèse présentée à la faculté des sciences. [Tertiary Insects of France.] Pp. 556; 12 pls. 8vo. *Paris*, 1874. [Part I. published in *Ann. Sci. Géol.* 1870, and in *Bibl. Ecole Hautes Etudes*, 1871. Part II. in *Ann. Sci. Géol.* 1874, as noticed in the GEOLOGICAL RECORD for 1874, p. 318, where the names of new species are given. The whole reprinted with additions as above, 1874.]

Stratigraphy of the gypsum-beds of Aix-en-Provence, pp. 74; general account of fossil entomology, pp. 48; climatic and distributional inferences, pp. 17; and description of 126 species, many being new. See notice in *Rev. Sci.* sér. 2, t. iv. pp. 136, 137 [1874]. W. H. D.

——. Les insectes fossiles de la France. *La Nature*, t. iii. pp. 33–36, woodcuts. [1874.]

——. [Analogies between the Oligocene Insects of S. France and those of the Rocky Mountains, or the Recent Insects of Central America.] *Bull. Soc. Philom. Paris*, sér. 6, t. xi. p. 21. [1874 (? published 1877).]

Pahlen, Alexis von der. Monographie der baltisch-silurischen Arten der Brachiopoden-Gattung Orthisina. [*Orthisina* from the Baltic Silurian.] *Mém. Ac. Imp. Sci. St. Pétersb.* sér. vii. t. xxiv. no. 8, pp. 52, pl. iv. [1877.]

Describes 16 species, the following being new:—*O. concava, O. squamata, O. Schmidti, O. marginata, O. emarginata, O. pyramidalis, O. sinuata*, and *O. ingrica.* W. H. D.

Pirona, G. A. Sopra una nuova specie di Radiolite. [New *Radiolites.*] *Mem. R. Ist. Ven. Sci.* pp. 7, pl. [1875.]

Describes *R. forojuliensis,* from L. Eocene of Mt. Subit, Udine.

Quenstedt, F. A. Petrefaktenkunde Deutschlands. Abth. 1, Bd. v. Korallen. Heft 4, pp. 321–448, pls. 131–136. 8vo. *Leipzig,* 1877.

——. [Atlas to entire volume of same.] 4to. *Leipzig,* 1877.

——. Petrefactenkunde Deutschlands (Korallen). [German Fossils.] Bd. v. Heft 5, pp. 449–612, pls. 137–142. 8vo. *Leipzig,* 1877.

Continues the sponges, of which very many are described under new names as well as old, the characters being those of shape and the position of the oscula, &c., but none microscopic. F. J. B.

Raffray, Achille. Note sur des insectes renfermés dans des morceaux de gomme copal. [Insects in Copal.] *Ann. Soc. Entom. France,* sér. 5, t. v. pp. cxxv, cxxvi. [1875.]

Raincourt, — de. Description d'espèces nouvelles du bassin de Paris. [New Parisian Fossils.] *Bull. Soc. Géol. France,* sér. 3, t. v. pp. 329–333, pl. iv. [1877.]

Describes and figures the interior of *Teredina personata,* the valves of *Teredo modica,* and the following new species:—*Saintia* (n. gen.) *Munieri, Lucina Conili, Trigonocœlia Ferrandi, Cerithium Gulielmi, Triforis Herouvallensis,* and *Fusus Ludovici,* from Sables Inférieurs of Hérouval; *Cypræa Velaini,* from Calcaire grossier, Fontenay. W. H. D.

Reinsch, P. F. [Microfauna of Franconian Lias.] *N. Jahrb.* 1877, pp. 176, 177.

Note on the number of species; 10 new genera are named, but not described, viz.:—*Acanthospira, Clyphogonium,* and *Amphigramma* in Foraminifera; *Heliodiscites, Rotulites, Dictyochites,* and *Stilodictyna* in Radiolaria; *Spongulites, Microdictytes,* and *Labyrinthozoon* in Spongia. W. H. D.

Rouchy, Abbé. [Coleopterous Borings in a Trunk of Fossil *Walchia.*] *Pet. Nouv. entom.* t. i. p. 551. [1875.]

Rutot, A. Description de la *Rostellaria robusta,* Rutot, Fossile de l'Argile de Londres et de l'Étage Bruxellien des Environs de Bruxelles. [*Rostellaria* of London Clay and Bruxellian of Brussels.] *Ann. Soc. Mal. Belg.* t. xi. *Mém.* pp. 105–109, pl. v. [1877.]

Unites *R. macroptera* and *R. ampla* under this name.

——. Quelques Observations relatives aux Conclusions de M. Lefèvre dans son rapport sur mon travail intitulé "Description de la *Rostellaria robusta,* Rutot." [Reply to Lefèvre.] *Proc.-verb. Soc. Mal. Belg.* t. vi. pp. ix–xviii. [1877.]

Schafhaeutl, —. [New Coral, *Ktenodema* in *Diceras*-Limestone of Kellheim.] *N. Jahrb.* 1877, pp. 622.
Describes *K. bisulcatum*, n. gen. and sp.

Schlüter, C. Kreide-Bivalven. Zur Gattung *Inoceramus*. [Cretaceous Bivalves. Genus *Inoceramus*.] *Palæontographica*, Bd. xxiv. Lief. 6, pp. 249–290; 4 plates. [1877.]
Describes the following new species:—*I. Ewaldi*, *I. virgatus*, *I. inæquivalvis*, *I. radians*, *I. subcardissoides*, *I. gibbosus*, and gives a table of distribution for the genus. E. T. N.

Scudder, S. H. On an English Fossil Insect, supposed to be Lepidopterous. *Proc. Boston Soc. Nat. Hist.* vol. xvi. p. 112. [1874.]
Palæontina oolitica from Stonesfield Slate is Homopterous.

——. Supplementary Note on Fossil Myriapods. *Mem. Boston Soc. Nat. Hist.* vol. ii. pp. 561, 562. [1876.] Cancel

——. Note on the close Affiliation of the Insects of Europe and America in the Carboniferous Epoch. *Proc. Boston Soc. Nat. Hist.* vol. xviii. pp. 358, 359. [1876.]
They were as intimately related as now.

——. [*Breyeria* is not Lepidopterous.] *Ann. Soc. Entom. Belg.* t. xix. p. ii. [1876.]

——. Critical and Historical Notes on Forficulariæ; including Descriptions of new Generic Forms and an Alphabetical Synonymic List of the described Species. *Proc. Boston Soc. Nat. Hist.* vol. xviii. pp. 287–332. [1876.]
8 fossil forms are mentioned.

——. Entomological Notes. V. Pp. 72. 8vo. *Boston*, 1876.
Reprints the last article and the paper noticed in the Geological Record for 1876, p. 362.

——. Note on Fossil Ants from South Park, Colorado. *Amer. Nat.* vol. xi. p. 191. [1877.]

——. Note on the Wing of a Cockroach from the Carboniferous Formation of Pittston, Penn'a. *Proc. Boston Soc. Nat. Hist.* vol. xix. pp. 238, 239. [1877.] Cancel

——. Les insectes des lits tertiaires de Quesnel. [Tertiary Insects from Quesnel.] From the French edition of the Report of the Canadian Geological Survey for 1875–76, pp. 266–280. [1877.] See the Geological Record for 1877, pp. 128, 318.

Sintzof, J. [Descriptions of new and little-known Tertiary Mollusca of New Russia.] *Zapiski Novoruss. Obsch. Estest.* 1875, pl. i.

Sollas, W. J. On *Stauronema*, a new Genus of Fossil Hexactinellid Sponges, with a Description of its two Species, *S. Carteri* and *S. lobata*. *Annals*, ser. 4, vol. xix. pp. 1–25; 5 pls. [1877.]

Some new forms of Sponges, belonging to the Vitreohexactinellidæ, from the Gault of Folkestone are described; and a new genus, *Stauronema*, is established with 2 distinct forms, *S. Carteri* and *S. lobata*.

E. T. N.

Stöhr, Emil. [Microscopic Study of Radiolaria.] *N. Jahrb.* 1877, p. 278.

Mode of separating and mounting these organisms from Sicilian tripolite.

Stürzenbaum, Jos. [Fauna of the *Ceratites Reitzi* Zone in the Bakony Wald.] *Földt. Közl.* vol. v. [1875.]

——. [Colossal Foraminifera.] *Földt. Közl.* köt. vii. [1877.]

Terquem, C., and G. Berthelin. Étude Microscopique des Marnes du Lias Moyen d'Essey-lès-Nancy, Zone inférieure de l'assise à *Ammonites margaritatus*. [M. Lias Microscopic Fossils of Nancy.] *Mém. Soc. Géol. France*, sér. 2, t. x. pp. 119, pls. xi.–xx. [1875].

General remarks, pp. 1–10. Describes the following new species, others being less fully noticed:—

FORAMINIFERA.

Lagena mucronata, L. laticosta.
Discoidina (n. gen.) liasica.
Spirillina orbicula, S. numismalis.
Nodosaria incerta, N. simplex, N. aspera, N. variabilis, N. multicosta.
Glandulina regularis, G. turbinata, G. annulata, G. hybrida.
Lingulina ovalis.
Dentalina nodigera, D. alternans, D. agglutinans, D. cuneiformis, D. clava, D. mitis, D. demissa, D. egregia, D. picturata, D. spatulata, D. notabilis, D. oculina, D. cognata, D. geniculata, D. doliolum.
Frondicularia pupa, F. venusta, F. squamosa, F. concinna, F. obscura, F. tricosta, F. texta, F. nuda, F. parallela, F. dubia.
Flabellina insignis, F. primæva.
Cristellaria breviformis, C. contracta, C. alata, C. pistillum, C. bicostata, C. dentaliniformis, C. larva, C. obtorta, C. plebeia, C. parilis, C. impressa, C. sparsa, C. semi-incisa, C. obvoluta, C. nexa, C. sculpta, C. impleta, C. lacunata, C. pedum.
Haplophragmium vetustum.
Marginulina spuria, M. utricula, M. gibberula, M. lamellosa, M. crassiuscula, M. laxata, M. disparilis, M. constricta.
Rotalina liasina, R. simplex.
Globigerina liasina.
Textilaria concava, T. limbata, T. vicinalis, T. racemata, T. problematica, T. globigera, T. squamosa.
Verneuilina liasina.
Bulimina antiqua.
Guttulina liasina, G. obliqua, G. similis.
Biloculina liasina.
Spiroloculina longiscata, S. concentrica, S. centrata, S. aspera.
Quinqueloculina lanceolata, Q. ovula, Q. trapezoidalis, Q. rotundata, Q. compressa, Q. contraria.

MOLLUSCA.

Microhelix (n. gen. Gasteropoda) contracta, M. ovula, M. unicincta.
Chiton liasinus.
Nucula navicula.
Limea obtusicostata.

ECHINODERMATA.

Hemisphæranthos (n. gen. Holothuridæ) florida, H. costifera.

W. H. D.

Tiberi, N. Fam. Chitonidi; specie viventi mediterranee e fossili terziarie italiane. [Recent and Tertiary *Chitons*.] *Bull. Soc. Mal. Ital.* vol. iii. [1877.]

A continuation.

Tournouër, R. Étude sur les Fossiles tertiaires de l'île de Cos recueillis par M. Gorceix en 1873. [U. Pliocene Fossils of Cos.] *Ann. Sci. Ecole norm. sup.* sér. 2, t. v. pp. 31; 2 pls. [1876.]

——. Description d'une nouvelle espèce fossile de Melanopside provenant des terrains tertiaires supérieurs de la province de Constantine. [New *Melanopsis*, ? Pliocene, Constantine.] *Journ. Conchyl.* ser. 3, t. xvii. pp. 275, 276. [1877.]

Describes *M. Thomasi.*

Trautschold, H. Erganzungen zur Fauna der russischen Jura. *Verh. St. Pet. min. Ges.* 1876, pp. 35; 6 pls.

The following species are new—*Natica semistriata, Opis quadrangularis*, and *Terebratula pseudotrigonella.*

Tribolet, M. F. de. Note sur les Nérinées et les travaux récents dont elles ont été l'objet, suivie d'un Catalogue répartitif des espèces de ce genre se trouvant dans les terrains jurassiques supérieurs du Jura. [Bibliography of *Nerinæa* and Classified List of U. Jurassic Species.] *Arch. Sci. Phys. Nat.* t. l. pp. 151–183. [1874.]

Divides the group into 4 genera—*Nerinea, Cryptoplocus, Itieria*, and *Aptyxis*—giving the range of the species in the U. Jurassic of the Jura Mts. W. H. D.

Tromelin, Gaston de. Étude de la faune du grès silurien dans le Calvados. *Bull. Soc. Linn. Norm.* sér. 3, t. 1, pp. 5–82.

I. Avant-propos. II. Description of species. III. Résumé and conclusions. Appendix. Many species described, the following being new:—*Bellerophon Lebescontei, Holopæa Cammontii, Modiolopsis Morierei, M. Dollfusi, Clidophorus Brebissoni, Cadomia* (n. gen.) *typa, Solen ? mayensis, Fenestella Dalimieri.* A table of species with distribution is given. E. T. N.

Verbeek, R. D. M. Die Fossielen in den Kolenkalksteen van Sumatra's Westkust. [Carboniferous Limestone Fossils, W. Sumatra.] *Jaarb. Mijn. Ned. O.-Ind.* jg. 3, deel ii. p. 186. [1875.]

Vincent, G. Description de la Faune de l'Étage Landenien Inférieur de Belgique. [Fauna of L. Landenian of Belgium.] *Ann. Soc. Mal. Belg.* t. xi. *Mém.* pp. 111–160, pls. vi.–x. [1877.]

Sketches the nature, range, and foreign equivalents of the series. Describes and figures the fish, crustacea, and mollusca, the following species being now:—

Oxyrhina Winkleri.

——

Triton fenestratum.

Fusus Landinensis, F. Colbeaui, F. Wanzinensis.

Pseudoliva antiqua.

Pleurotoma Corneti, P. Gosseleti, P. Dewalquei, P. Balstoni, P. Loozi, P. Rutoti, P. incompta, P. Dollfusi, P. Ortliebi, P. Hallezi, P. subduchasteli, P. ? volutæformis.

Turbonilla ingens.

Cerithium Broecki, C. quinquecinctum, C. Morrisii, C. Rutoti.

Chenopus Thielensi.

Solarium Landinense.

Turbo quinquecarinatus.

Dentalium Landinense. W. H. D.

Young, John. On Siliceous Sponges from the Carboniferous Limestone near Glasgow. *Rep. Brit. Assoc.* for 1876, *Sections*, p. 99. [1877.]

Zachariæ, C. A. Description of Fossil Organic Remains from Bendigo. *Quart. Journ. Geol. Soc.* vol. xxxiii. *Proc.* pp. 95, 96. [1877.]

Abstract with list only, in which 1 Crustacean, 6 Sertulariæ, and 17 Graptolites are new species.

See also :—

Arnaud, H. Cretaceous Fossils, S.W. France: p. 125.

Baily, W. H. Cambrian Fossils, Bray: p. 2.

Barrois, Dr. C. List of Fossils, Ardennes: p. 46.

Benecke, E. W. Lists of Fossils from Trias, Alsace-Lorraine and Luxemburg: p. 126.

Benoist, E. Lists of Fossils, S.W. France: p. 48.

Berthelin, G. List of Gault Mollusca, Doubs: p. 126.

Bittner, A. Lists of Hallstadt Fossils: p. 49.

Blake, Rev. J. F. List of Yorkshire Chalk Fossils: p. 3.

Brodie, Rev. P. B. Eocene Insects, Isle of Wight: p. 5.

Brögger, W. C. Norwegian Fossils: p. 127.

Buckman, Prof. J. Lists of Oolitic Fossils, Dorset: p. 38.

Capellini, Prof. G. U. Tertiary Fossils, Tuscany: p. 52.

Carez, L. Fossils of Gypsum Marls: pp. 52, 53.

Cartier, R. Fossils of the Jura: p. 127.

Choffat, P. Callovian and Oxfordian Fossils, Jura: p. 54.

Ciofalo, Prof. S. List of Miocene Fossils, Ciminna: p. 54.

Cornet, F. L. Lists of Oligocene Fossils, Transylvania: p. 128.

Cotteau, G. M. Tertiary Fossils, Corsica: p. 57.

Crowfoot, W. M., and E. T. Dowson. List of Norwich Crag Fossils: p. 7.

Deby, J. Lists of Fossils of Polders Clay: p. 129.

Depontaillier, J. List of Pliocene Fossils, Cannes: p. 59.

Dixon, F. (and others). Sussex Fossils: p. 9.

Dufour, E. Lists of Eocene Fossils, Loire Inférieure: p. 62.

Eck, A. Lists of Fossils of Calcaire de Ludes: p. 63.

Etheridge, R., Jun. Scotch Fossils: under **Irvine**, p. 17.

Fontannes, F. Neogene Fossils, Rhone basin: p. 67.

Fuchs, T. U. Tertiary Fossils, Greece: p. 133.

Giebel, C. *Trigonia alata* ?, Quedlinburg: p. 134.

Greppin, Dr. Fossils of Mayencian and of Ferret Valley: p. 135.

Hall, T. M. Lists of Devonshire Fossils: p. 13.

Hantken, Max. Hungarian Fossils: p. 136.

Heer, O. Miocene Beetles, Grinnell Land: *post* (under PLANTS).

Henry, J. Lias Fossils, France: p. 137.

Herbich, Dr. F. Transylvanian Fossils: p. 176.

Hilber, Dr. V. Lists of Syrian Miocene Fossils: p. 77.

Hock, G. *Gryphæus*: p. 78.

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Hudleston, W. H. Lists of Yorkshire Oolitic Fossils: p. 16.

Hull, Prof. E. Lists of Irish Fossils: p. 17.

Jones, R. W. Old Red Sandstone Fossils, S. Wales: p. 18.

Judd, Prof. J. W. Lists of Secondary Fossils, Scotland: p. 18.

Junghann, Dir. Otto. Silesian Fossils: p. 81.

Karrer, F. Foraminifera of Luzon Tertiary: under **Drasche**, p. 184.

Koch, Dr. A. Lists of Tertiary Fossils, Hungary: p. 139.

Lacvivier, — de. New *Micraster*: p. 82.

Lamplugh, G. W. List of Drift Shells, Yorkshire: p. 19.

Lapworth C. Lists of Fossils, Moffat Series: p. 20.

Lebour, Prof. G. A. Northumbrian Fossils, lists: p. 20.

Lepsius, Dr. R. Tyrolese Fossils: p. 84.

Leymerie, Prof. A. Garumnian Fossils: p. 85.

Loriol, P. de. *Pentacrinus*, France: p. 87.

Lyman, B. S. Japan Fossils: p. 164.

M'Coy, F. Victorian Fossils: p. 178.

MacDakin, Capt. Bognor Fossils: p. 22.

Malaise, C. Lingula, Cambrian, Ardennes: p. 91.

Marr, J. E. *Phacops*, Lake District: p. 22.

Martin, K. Drift-pebble Fossils: p. 91.

Miall, L. C. Lists of Yorkshire Carboniferous Fossils: p. 22.

Moore, C. Cretaceous Fossils, London: p. 23.

Morière, Prof. J. Lists of Fossils of Lias and Silurian, France: p. 94.

Morton, G. H. Lists of Carboniferous Fossils, Llangollen: p. 24.

Nicholson, H. A. Recent Progress in Palæontology: p. 302.

Oldham, T. B. Lists of Rugby Fossils: p. 24.

Pantanelli, D. Tertiary Mollusca, Casino: p. 147.

Pirona, G. A. Jurassic Fossils, Friuli: p. 99.

Reinhardt, —. Drift Fossils, Muggelheim: p. 149.

Rigaux, H. Lists of Brachiopoda of Boulonnais: p. 104.

Römer, F. List of Carboniferous Fossils, U. Silesia: p. 105.

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Rzehak, A. Jurassic Fossils, Moravia: p. 106.

Schlüter, C. Range of *Scaphites* and *Inoceramus*, Denmark and N. Germany: p. 152.

Schreiber, Dr. A. Oligocene Fossil, Magdeburg: p. 153.

Shone, W. Cheshire Drift Fauna: p. 29.

Shrubsole, W. H. List of London Clay Fossils: p. 29.

Sterzel, Fr. Removal of *Palæojulus* to Plants: *post* (under PLANTS).

Stock, T. Fossil Localities, &c.: p. 30.

Stöhr, E. List of Tortonian Fossils, Sicily: p. 110.

Struckmann, C. U. Jurassic Fossils, Hanover: p. 111.

Szabo, Dr. J. Lists of Fossils of Salgó-tarjáni Colliery: p. 155.

Tate, R. S. Australian Palæontology: p. 183.

Tawney, E. B. List of Lias Fossils, Bristol: p. 31.

Tomes, R. F. Lias Corals, England and Wales: p. 31.

Toula, F. Devonian and Turkish Cretaceous Fossils: pp. 115, 116, 156.

Tournouër, R. Quaternary, Seine and Marne: p. 116.

Trenkner, W. Secondary Fossils, Hanover: p. 157.

Tromelin, G. de. Lists of Palæozoic Fossils, Normandy: p. 117.

Vanden Broeck, E., and P. Cogels. Lists of Pliocene Fossils, Belgium: pp. 118, 119.

Villa, A. and G. B. Lists of Fossils, Oggiono: p. 120.

Vincent, G., and A. Rutot. Lists of Wemmelian Fossils: p. 121.

Waagen, Dr. Kumaon Fossils: under **Hughes,** p. 163.

Walford, E. A. Lists of Lias Fossils, Banbury: p. 33.

Walker, J. F. Lists of Oolitic Brachiopoda, Dorset: p. 33.

Whitaker, W. (and others). Lists of Fossils, Essex: p. 34.

Woods, J. E. T. Australian Tertiary Fossils: p. 183.

Woodward, Dr. H. *Branchipus,* I. of Wight: p. 35.

Zareczny, Dr. S. M. Cretaceous Fossils, Cracow: p. 122.

Zsigmondy, W. List of Foraminifera, &c., Budapest: p. 123.

Plates of French Fossils: p. 159.

3. *PLANTS.*

Sub-Editor W. Carruthers, F.R.S., F.G.S.

Andrä, Dr. C. J. Ueber einige Farne der Steinkohlenflora. [Some Ferns of the Carboniferous Flora.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxv. pp. 13, 14.

A fragment of *Pecopteris nervosa* shows that this plant had a proliferous apex.

Binney, G. W. Notice of a Fossil Plant found at Laxey, in the Isle of Man. *Proc. Manch. Lit. Phil. Soc.* vol. xvii. pp. 85–88, woodcut. Reprinted in *Mem. Lit. Phil. Soc. Manch.* ser. 3, vol. vi. pp. 214–217 (1879).

Resembles *Psilophytum cornutum* of Lesquereux. From a rolled piece of schist, probably of the age of the Skiddaw slates.

Carruthers, William. Description of Tertiary Plant-remains from Bracklesham and Worthing, Sussex. *Dixon's Geology of Sussex,* pp. 162–167 and 277–282 [see p. 9].

Enumerates the known species, and describes the following additional plants—*Pinites Bowerbanki*, *Cedroxylon Worthingense*, *Carpolithes Dixoni*, *Palmacites Dixoni*, *P. constrictus*, and *P. oblongus*. W. C.

Castel, C. Una Conifere del Trias. *Ann. Soc. Españ. Hist. Nat.* vol. vii.

Describes *Albertia elliptica*, Sch., from Campillo, Spain.

Claypole, E. W. On the Occurrence of a Fossil Tree (*Glyptodendron*) in the Clinton Limestone (Base of Upper Silurian) of Ohio, U. S. *Amer. Journ.* ser. 3, vol. xv. pp. 302–304; *Geol. Mag.* dec. ii. vol. v. pp. 558–564.

Figures and describes a fossil with Lepidodendroid scars under the name *Glyptodendron Eatonense*, and reviews the N. American fossils of Silurian age that had been considered to be plants. W. C.

Conwentz, H. Ueber ein tertiäres Vorkommen cypressenartiger Hölzer bei Calistoga in Californien. [Tertiary Cypress Stem from near Calistoga, in California.] *N. Jahrb.* p. 800, pls. xiii., xiv., and *Schrift. nat. Ges. Danzig*, Bd. iv. Heft 3.

The wood is figured and described as *Cupressoxylon taxodioides*, probably from Pliocene.

Crépin, F. Guide du Botaniste en Belgique.

Includes the fossil flora, mentioning many species.

Crié, Louis. Recherches sur la Végétation de l'Ouest de la France à l'Époque Tertiaire. [Vegetation of W. France in the Tertiary Period.] *Ann. Sci. Géol.* t. ix. pp. 72, pls. 8–22.

Remarks on the older floras, to p. 6. Flora of the Eocene Sandstones of Mans and Angers, pp. 7–72? General account of the beds. General character of the vegetation. Description of species, of which the following are new (some by **G. de Saporta**), and mostly figured:—

Chara Fyeensis.
Aneimia dissociata, *Sap.*, A. Cenomanensis.
Lygodium Fyeense.
Asplenium Cenomanense.
Bambusa Cenomanensis, B. Fyeensis.
Poacites Sargreensis, P. Fyeensis.
Sabalites Chatiniana.
Flabellaria Saportana, F. Sargreensis.
Palmacites Fyeensis (not figured).
Araucarites Roguiei, *Sap.*
Podocarpus Fyeensis.
Quercus Cenomanensis, *Sap.*, Q. Criei, *Sap.*, Q. tæniata, *Sap.*, Q. Heberti, Q. palæo-drymeja, *Sap.* (not figured).
Morinda Brongniarti.
Nerium Sarthacense, *Sap.*
Echitonium punctatum, E. Sargreense.
Apocynophyllum Cenomanense.
Myrsine Fyeensis.
Bumelia Cenomanensis.
Diospyros senescens (?), *Sap.*, D. Pavacensis, D. Sarthacensis, D. lacerata.
Andromeda dermatophylla, *Sap.*
Celastrus Cenomanensis.
Apeibopsis Decaisneana.
Carpolithes Duchartrei.
Anacardites Fyeensis.

Besides the following *incertæ sedis*:—

Phyllites marginatus, P. pennatus, P. pusillus.
Carpolithes Saportana, C. hians, C. quinquelocularis.

General considerations. The striking points are the abundance of palms and the occurrence of certain fruits. The flora of Mans and Angers is allied, by various species, to the floras of the Soissonais sands, of the white clays of Alum Bay, of Skopau, and of the gypsum of Aix.
W. W.

——. Note sur les Morinda de la Flore Eocène du Mans et d'Angers. [*Morinda* of the Mans and Angers Eocene.] *Bull. Soc. Linn. Norm.* sér. 3, t. ii. pp. 46–50.

The new species *Morinda Brongniarti* is described.

——. Les Tigillites siluriennes. [Silurian Tigillites.] *Compt. Rend.* t. lxxxvi. pp. 687–689.

The fossils known as *Tigillites* are neither worm-tracks nor fucoids (e. g. *Fucoides cylindricus* of Barrande and *Scolithus linearis* of Hall), but the remains of plants of a higher grade. G. A. L.

Dawson, J. W. Notes on some Scottish Devonian Plants. *Canad. Nat.* n. ser. vol. viii. no. 7, pp. 379–389, pl. iv.

Refers to the relationship between *Lepidodendron Gaspianum* of the Devonian of E. America, and *L. nothum* of Unger and Salter. A new species of *Psilophyton* is named *P. Thomsoni.* R. B. N.

Ettingshausen, Dr. Const. von. Beiträge zur Erforschung der Phylogenie der Pflanzenarten. [Contributions to the Knowledge of the Phylogeny of the Species of Plants.] *Denkschr. k., Ak. Wiss.* Bd. xxxviii. pp. 65–80; 10 plates.

Remarks on Conifers of the Styrian and Croatian lignites.

——. Beiträge zur Flora von Parschlug. 1. Blattpilze und Moose. [Flora of Parschlug. Leaf-fungi and Mosses.] *Denkschr. k. Ak. Wiss.* Bd. xxxviii. pp. 81–92; 5 pls. Abstract in *Sitz. k. Ak. Wiss.* Bd. lxxxvi. pp. 268–270.

30 species are here established, of which the following are new:—

Phyllerium lignitum, P. Parschlugianum.
Sphæria Mediterranea, S. Daphnes, S. achreia, S. Duncani, S. Ungeri, S. palæo-Sapindi, S. palæo-Lentisci.
Hysterium Parschlugianum.
Xylomites Liquidambaris, X. Daphnes, X. Rhamni Aizoonis, X. Quercus Serræ, X. Lauri, X. Drymejæ, X. ambiguus, X. Pistaciæ, X. Aristolochiæ, X. Aceris decipientis.
Rhytisma Planeræ, Rh. Pithii, Rh. Aceris, Rh. Parschlugiana.

E. B. T.

Fairchild, H. L. On the Identity of certain supposed Species of *Sigillaria* with *S. lepidodendrifolia*, Bgt. *Ann. N. York Ac. Sci.* vol. i. no. 5, pp. 129–133, pl. x.

Identifies with the above, *S. rhomboidea*, *S. obliqua*, *S. Brardii*, *S. Menardi*, *S. Serlii*, and *S. Defrancii* of Brongniart, and *S. sculpta* of Lesquereux, and with doubt *S. stellata*, Lsqx., and *S. spinulosa*, Germ. W. H. D.

Feistmantel, Dr. O. Palæontologische Beiträge. III. Palæozoische und mesozoische Flora des östlichen Australiens. [Palæozoic and Mesozoic Flora of E. Australia.] *Palæontographica*, Suppl. iii. Lief. iii. Hefte 2, 3, pp. vi, 52–84, 85–130, pls. ix. x., xi.–xviii. (Continued in 1879.)

Continuation of the work noticed in the GEOLOGICAL RECORD for 1877, pp. 371, 372. Bibliography, pp. 56–61. Stratigraphy 62–64. Palæontological Tables, 65–67. Description of Plant-remains, 68–112. Remarks on Indian and S. African Plant-beds, with Tables of correlation and range of genera, &c., 112–130. The following are new species:—

CARBONIFEROUS.

Rhacopteris intermedia.
Cyclostigma australe.
Glossopteris primæva, G. Clarkei.

SECONDARY.

Glossopteris Tæniopteroides, G. Wilkinsoni, G. parallela.
Gangamopteris Clarkeana.
Caulopteris Adamsi.
Brachyphyllum australe
Gleichenia dubia.
Macrotæniopteris Wianamattæ
Sagenopteris Tasmanica.

W. H. D.

Feistmantel, Dr. O. Beitrag zur fossilen Flora des böhmischen Steinkohlenbeckens. [Bohemian Carboniferous Flora.] *Jahresb. naturhist. Ver. Lotos.*

——. Cycadaceous Plants of the Damudas. *Geol. Mag.* dec. ii. vol. v. pp. 92, 93.

Corrects and explains some statements in previous papers.

Geyler, Dr. H. T. Ueber einige paläontologischer Fragen insbesondere die Juraformation Nordostasiens. [Palæontological Notes on the Jurassic of N.E. Asia.] *Ber. Senckenb. nat. Ges.* pp. 53–70.

Notes on the origin and later history of the Jurassic Flora of Europe and Asia, and on the geography of the period.

Heer, Prof. Oswald. Notes on Fossil Plants discovered in Grinnell Land by Captain H. W. Feilden, Naturalist of the English North-Polar Expedition. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 66–72.

Notes on this Miocene flora, described in *Flora Fossilis Arctica*. See the following.

——. Flora Fossilis Arctica. Die fossile Flora der Polarländer. Bd. v. pp. 178; 45 pls. 4to. *Zurich.*

Republication of memoirs:—

1. Die miocene Flora des Grinnell-Landes, gegründet auf die von Capt. H. W. Feilden und Dr. E. Moss in der Nähe des Kap Murchison gesammelten fossilen Pflanzen. Pp. 38; 10 pls.

Describes 30 species of plants and a beetle, the following being new species:—

Equisetum costatum.
Feildenia (n. gen. Taxineæ) Mossiana, F. major.
Pinus Feildeniana, P. Hayesiana.
Phragmites Hallianus.
Caulinites tæniatus.
Ulmus borealis.
Phyllites fagopyrinus.

Carabites Feildenianus.

2. Beiträge zur fossilen Flora Sibiriens und des Amurlandes. [Fossil Flora of Siberia and Amoorland.] *Mém. Ac. Imp. Sci. St. Pétersb.* sér. vii. t. xxv. no. 6, pp. 58; 15 pls.

1. Jurassic Flora of the Irkutsk Province (supplement). 2. Jurassic

Flora of Arctic Siberia. 3. Cretaceous? Flora of Atyrkan. 4. Tertiary Flora of the Tschirimy Beds. 5. Miocene Plants of S.W. Siberia. 6. Tertiary Plants of Amoorland and Manchuria. The new species are:—

1.

Asplenium Petruschinense.
Lycopodites Baleiensis [Baicalensis].
Carpolithes Hartungi.
Vallisneriites (n. gen.) jurassicus.

2.

Dicksonia arctica, D. borealis.
Rhizocarpites (n. gen.) singularis.
Cycadites sibiricus.
Nilssonia orientalis, N. comtula.
Carpolithes Bulunensis.
Baiera angustiloba.

3.

Dicksonia microphylla.
Pecopteris latiloba, P. Atyrkanensis.

4.

Asplenium Czekanowskianum.
Gingko reniformis.
Taxodium gracile.
Sequoia sibirica.

5.

Pinus Lopatini.
Aralia Tschulymensis, A. Baeriana.
Nymphæites tener.
Eucalyptus sibirica.
Myrtophyllum boreale.
Acer sibiricum.
Ilex Schmidtiana.

6.

Pinus podosperma.
Laurus Schmidtiana.
Leguminosites mandschuricus.

W. H. D.

Heer, Dr. Oswald. Primitiæ Floræ Fossilis Sachalinensis. Miocene Flora der Insel Sachalin. *Mém. Ac. Imp. Sci. St. Pétersb.* sér. vii. t. xxv. no. 7, pp. 61; 15 pls.

In the Introduction (pp. 1–16) notes the relation to synchronous floras in the Arctic, American, and European localities, and the range of modern allies. Describes 74 species, the following being new:—

Asplenium Glehnianum.
Sphenopteris appendiculata.
Pteris amissa.
Nilssonia serotina, N. pygmæa.
Myrica solida, M. Brylkiniana, M. tenuifolia.
Betula Sachalinensis.
Ulmus appendiculata.
Viburnum Schmidtianum, V. spinulosum.
Cissus spectabilis, C. insularis.
Tilia Sachalinensis.
Sterculia Glehniana.
Acer Sachalinense, A. ambiguum.
Sapindus defunctus.
Kœlreuteria? serrata.
Cupania longipes.
Rhamnus punctatus.
Prunus serrulata, P. calophylla.
Sophora? Schmidtiana.
Gleditschia Duiensis.
Phyllites acuminatus.
Carpolithes rostratus.

W. H. D.

——. Beiträge zur miocänen Flora von Sachalin. *K. Svenska Vet.-Akad. Handl.* Bd. xv. pp. 11; 4 pls.

Supplement to no. 3. No new species.

——. Ueber fossile Pflanzen von Nowaja Semlja. [Fossil Plants of Nova Zembla.] *K. Svenska Vet.-Akad. Handl.* Bd. xv. pp. 5, pl. i.

The specimens are referred to *Cordaites palmæformis*,

Lebour, G. A. Catalogue of the Hutton Collection of Fossil Plants, including a synoptical list of the chief Carboniferous Species not in the Collection. Pp. 132.

Catalogue of the species in the Newcastle Museum.

Lesquereux, Prof. Leo. Contributions to the Fossil Flora of the Western Territories. Part II. The Tertiary Flora. *Rep. U.S. Geol. Surv. Territories*, vol. vii. pp. xv, 366; 65 pls.

329 species are described and figured, consisting of 45 Cryptogams, 17 Gymnosperms, 33 Monocotyledons, and 234 Dicotyledons. A comparison of these with already described species leads to placing them as the equivalents of the European Miocene and Eocene Floras. The presence of a few invertebrate animals and a Saurian of Cretaceous types should not set aside the plant evidence. Most of the species have been already noticed in previous reports. ✓

The following are new:—

Lastrea intermedia.
Sequoia acuminata.
Geonomites Schimperi, G. tenuirachis, G. Ungeri.
Palmocarpon truncatum, P. corrugatum, P. subcylindricum.
Quercus cinereoides.
Populus Ungeri.
Laurus socialis, L. ocoteoides, L. Utahensis.
Viburnum anceps, V. Goldianum, V. solitarium.
Fraxinus eocenica, F. Brownellii.
Vitis sparsa.
Cornus suborbifera.
Dombeyopsis platanoides.
v/. Grewiopsis Saportana, G. tenuifolia.
Acer æquidentatum.
Sapindus stellariæfolius.
Celastrinites lævigatus.
Ilex Vyomingiana, I. dissimilis.
Juglans Leconteana.
Rhus pseudo-Meriani.
Cratægus? æquidentata.
Podogonium Americanum.
Leguminosites cassioides.
Phyllites sapindiformis.
Carpites oviformis, C. triangulosus, C. costatus, C. coffeæformis, C. Myricarum, C. rostellatus, C. glumæformis, C. mitratus, C. laurineus, C. Utahensis, C. verrucosus, C. minutulus, C. Viburni, C. rhomboidalis, C. bursæformis, C. Pealei, C. ligatus, C. valvatus.

W. C.

——. Report on the Fossil Plants of the Auriferous Gravel Deposits of the Sierra Nevada. *Mem. Mus. Harvard Coll.* vol. vi. no. 2, pp. 58; 10 double plates. ✓

Describes and figures 508 species, the following being new:—

Fagus pseudo-ferruginea.
Quercus convexa, Q. Boweniana, Q. Goepperti, Q. distincta, Q. Nevadensis, Q. pseudolyrata.
Castaneopsis chrysophylloides.
Salix californica, S. elliptica.
Platanus appendiculata.
Liquidambar Californicum.
Ulmus pseudofulva, U. Californica.
Ficus sordida, F. microphylla.
Persea pseudo-carolinensis.
Aralia angustiloba, A. Whitneyi.
Cornus ovalis, C. Kelloggii.
Acer æquidentatum, A. Bolanderi.
Ilex prunifolia.
Zizyphus piperoides, Z. microphyllus.
Juglans Californica, J. Oregoniana, J. laurinea.
Rhus metopioides, R. myricæfolia, R. dispersa, R. mixta, R. Boweniana, R. typhinoides.
Zanthoxylon diversifolium.
Cercocarpus antiquus.

W. H. D.

Lesquereux, Prof. Leo. Land Plants, recently discovered in the Silurian Rocks of the United States. *Proc. Amer. Phil. Soc.* vol. xvii. no. 100, pp. 163–173, pl. iv. (part).

The specimens described and figured come from the Cincinnati Formation and the L. Helderberg Sandstone of Michigan; they present "a microcosmical representation" of the Carboniferous flora. The new species are:—*Psilophytum gracillimum*, *P. cornutum*, *Calamophycus septus*, *Annularia Romingeri*, and *Protostigma sigillarioides*. R. B. N.

——. A species of Fungus recently discovered in the Shales of the Darlington Coal Bed (Lower Productive Coal Measures, Alleghany River Series) at Cannelton, in Beaver County, Pennsylvania. *Proc. Amer. Phil. Soc.* vol. xvii. no. 100, pp. 173–175, pl. iv. figs. 9, 9 *b*.

The specimen is described and figured under the name of *Rhizomorpha Sigillariæ* (n. sp.).

——. On the *Cordaites* and their related generic divisions, in the Carboniferous formation of the United States. *Proc. Amer. Phil. Soc.* vol. xvii. no. 101, pp. 315–335.

This genus is divided into:—

1. *Crassifoliæ*: Cordaites validus, C. crassus.
2. *Grandifoliæ*: C. grandifolius.
3. *Communes*: C. communis, C. diversifolius, C. Mansfieldi, C. gracilis.
4. *Costatæ*: C. costatus.
5. *Serpentes*: C. serpens.

Flowers and Fruits of Cordaites: Cordaistrobus (n. gen.) Grand'Euryi, Dicranophyllum dimorphum.

Tæniophylleæ: Tæniophyllum (n. gen.) deflexum, T. decurrens, T. contextum, Desmiophyllum (n. gen.) gracile, Lepidoxylon (n. gen.) anomalum.

These species, all new, are described. R. B. N.

——. *Cordaites* with flowers from the Coal Region of Pennsylvania. *Amer. Journ.* ser. 3, vol. xv. p. 317.

Mansel-Pleydell, J. C. Fossil Cycads. *Proc. Dorset Field Club*, vol. ii. pp. 1–11.

A review of the fossil species, followed by a detailed description and figures of a fine specimen of *Mantellia nidiformis*.

Morière, —. Note sur un Tronc Fossile paraissant se rapporter au Genre *Cycadeomyelon* (Saporta). [Trunk of *Cycadeomyelon*.] *Bull. Soc. Linn. Norm.* sér. 3, t. ii. pp. 51–55.

Mueller, Ferd. von. Observations on new Vegetable Fossils of the Auriferous Drifts. (Continued.) *Rep. Min. Surv. Reg. N. S. Wales*, for the Quarter ended 31st March 1878, pl. xiv (and) 30th Sept. 1878, pl. xv.

Besides other species described in 1877, is *Tricoilocaryon Barnardi*, n. gen. and sp., from Pliocene near Gulgong.

Nathorst, A. G. Om Floran i Skånes Kolförande bildningar. I. Floran vid Bjuf. [Fossil Flora of the Coal-bearing Series of Scania, Sweden. I. Flora at Bjuf Colliery.] *Sver. Geol. undersökn.* pp. 52; 12 plates. 4to. *Stockholm.*

The work is divided as follows:—Discovery of fossil plants at Bjuf; Mode of occurrence of the plants (with sections); List of fossil plants found at Bjuf (95 species); Age of the formation (Rhætic) and its relation to other Swedish localities; Account of the most important elements in the fossil flora of Bjuf; Description of the species. 42 species, all cryptogams, are described and figured, the following being new:—

Sagenopteris undulata, S. dentata.
Sphenopteris? baieræfolia.
Pecopteris simplex.
Polypodites? Angelini.
Camptopteris spiralis, C. incisa.
Dictyophyllum Carlsoni, D. obsoletum.
Rhizomopteris major.
Anthrophyopsis Nilssoni, A. tenuinervis, A. crassinervis.
Tæniopteris hastata, T. minuta, T. immersa, T. obtusa.
Phyllopteris? simplex.
Thinnfeldia rotundata.
Ctenopteris falcata.

E. E.

——. Om Floran i Skånes Kolförande bildningar. II. Floran vid Höganäs och Helsingborg. [Fossil Flora of the Coal-bearing Series in Scania, Sweden. II. The Flora at Höganäs and Helsingborg.] *K. Svenska Vet.-Akad. Handl.* Bd. 16, no. 7. Also separately published by the *Geol. Survey of Sweden*, pp. 53; 8 plates. 4to. *Stockholm.*

The beds are shown to be Rhætic. At Höganäs the Flora is divided into (*a*) an older and (*b*) a younger one, which latter is the same as (*c*) the Helsingborg Flora. From *a* are described and figured 33 species, from *b* and *c* 20 species. The following are new ones:—

Pecopteris Angelini.
Anthrophyopsis obovata.
Ptilozamites Nilssoni, P.? latior.
Adiantites Nilssoni.
Dictyophyllum Dunkeri.
Thaumatopteris Schenkii.
Androstrobus borealis.
Baiera marginata.
Carpolithes cinctus.
Kaidacarpum suecicum.

E. E.

——. Om *Gingko? crenata*, Brauns sp. från sandstenen vid Seinstedt nära Braunschweig. [On *Gingko? crenata*, Brauns, from the Sandstone at Seinstedt, near Braunschweig.] *Œfv. K. Vet.-Akad. Förh.* 1878, no. 3, pp. 81-85, pl.

Cyclopteris crenata is believed to be a coniferous leaf, and is referred to the genus *Gingko.*

——. Bilder ur forntidens växtverld. [Pictures of the Prehistoric Flora.] *Ur vår tids Forskning,* no. 20, pp. 1-80. 8vo. *Stockholm.*

A popular account of the plants of former epochs, from Silurian to Post-Tertiary. Many figures (woodcuts) in text.

——. Beiträge zur fossilen Floren Schwedens. Ueber einige rhätische Pflanzen von Pålsjö in Schonen. [Fossil Flora of Sweden.

Rhætic Plants, Pålsjö, Scania.] Pp. 34; 16 plates. 4to. *Stuttgart.*

German edition of the Swedish work noticed in the GEOLOGICAL RECORD for 1876, p. 308.

Peach, C. W. On the Circinate Vernation, Fructification, and Varieties of *Sphenopteris affinis*, and on *Staphylopteris* (?) *Peachii* of Etheridge and Balfour, a Genus of Plants new to British Rocks. *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 131–136, pls. vii., viii.

Describes and figures these fossils from L. Carboniferous beds near Edinburgh.

Renault, B. Recherches sur la Structure et les affinités botaniques des Végétaux silicifiés recueillis aux environs d'Autun et de St. Etienne. [Structure and Affinities of Silicified Plants from Autun and St. Etienne.] Vol. i. pl. 80.

Devoted to the minute structure of:—1. *Annularia* and *Asterophyllites*; 2. *Zygopteris*, *Botryopteris*, and *Anachoropteris*; and 3. *Lycopodiaceæ* and *Sphenophyllum*. W. C.

——. Structure des *Lepidodendron* (*L. Rhodumnense*). *Compt. Rend.* t. lxxxvi. pp. 1467–1470.

Notices the forms of stems previously published, and describes one found at Combres.

——. Structure de la tige des Sigillaires. *Compt. Rend.* t. lxxxvii. pp. 114–116.

Four genera, *Clathraria*, *Leioderma*, *Favularia*, and *Rhytidolepis*, are included in the true Sigillarias. Considers them allied to Cycadeæ, and in the group *Sigillarineæ* places *Sigillaria vascularis*, Binney, *Diploxylon*, Corda, *Sigillaria*, Brong., and *Medullosa stellata*, Corda. W. C.

——. Structure comparée des tiges des Lepidodendrons et des Sigillaires. *Compt. Rend.* t. lxxxvii. pp. 414–416.

While *Sigillaria* is placed with *Cycadeæ*, *Lepidodendron* is a true Cryptogam with macrospores and microspores. The *Sigillaria* figured by Goldenburg with spores at the bases of the leaves is a Cryptogam, and not a true *Sigillaria*. W. C.

——. Structure et affinités botaniques des *Cordaites*. *Compt. Rend.* t. lxxxvii. pp. 538–541.

From the examination of the stem, leaves, and fruit, considers *Cordaites* to be a Gymnosperm near *Cycadeæ*.

Röhl, E. von. [Carboniferous Plants from St. Avold, Lorraine.] *Verh. k.-k. geol. Reichs.* p. 213.

A list.

Saporta, Count Gaston de. Les Végétaux Fossiles de l'étage Rhétien en Scanie. A propos d'un mémoire du **Dr. A. G. Nathorst,** sur quelques plantes rhétiennes de Palsjö en Scanie. [Rhætic Plants in Scania, à propos of Nathorst on Rhætic plants from Palsjö: see p. 377.] *Ann. Sci. Géol.* t. ix. pp. 73–100, pl. 23.

Gives a table of the types of the Rhetian flora of Franconia. The plate represents 4 characteristic Rhetic plants.

——. Observations sur la nature des Végétaux reunis dans le groupe des *Noeggerathia. Compt. Rend.* t. lxxxvi. 1. Généralités et type du *N. foliosa*, pp. 746–749. 2. Types du *N. flabellata* et du *N. cyclopteroides*, pp. 801–804. 3. Types des *N. expansa* et *N. cuneifolia*, pp. 869–972.

Retains the name *Noeggerathia* for the species of the *N. foliosa* type, which are refered to Cycadeæ; and besides this species he refers here *N. rhomboidalis*. *N. cyclopteroides* is related to Coniferæ, and has the generic designation *Dolerophyllum,* the species being *D. Goepperti*. The *N. flabellata* type are related to *Salisburia,* and are named *Gingkophyllum,* the species being *G. flabellatum, G. Grasseti,* and *G. Kamenskianum*. The species of the type of *N. expansum* are referred to two new genera of Ferns, the one *Psygmophyllum,* with 3 species, *P. expansum, P. cuneifolium,* and *P. Santagoulourense,* and the other *Dichoneuron,* with a single species, *D. Hookeri.* W. C.

——. Sur le nouveau groupe paléozoique des Dolérophyllées. [New Palæozoic Group, *Dolerophylleæ.*] *Compt. Rend.* t. lxxxvii. p. 393.

A new phanerogamous prototype. The leaves have hitherto been referred to *Cardiopteris, Cyclopteris, Nephropteris,* and *Aphlebia.*

——. Sur une nouvelle découverte de plantes terrestres siluriennes, dans les schistes ardoisiers d'Angers, due à M. L. Crié. *Compt. Rend.* t. lxxxvii. pp. 767–769.

A second species of *Eopteris* is described and figured as *E. Criei.* This genus is the ancestor of *Cardiopteris* and *Cyclopteris.*

——. Essai descriptif sur les Plantes Fossiles des Arkoses de Brives près le Puy-en-Velay. *Ann. Soc. Agr. Sci. Puy,* vol. xxxiii. pp. 72; 6 pls.

Saporta, Count G. de, and Dr. A. F. Marion. Révision de la Flore Heersienne de Gelinden. [Heersian (L. Eocene) Flora of Gelinden.] *Mém. cour. Sav. Etr. Ac. Roy. Belg.* t. xli. art. 3. pp. 112; 14 pls.

Review the Cretaceous Floras of Europe and America, pointing out affinities between those of Dakota and Gelinden. Describe and figure the following new species and 11 previously known:—

Benitzia minima.
Zamites Palæocenicus.
Poacites latissimus.
Posidonia perforata.
Quercus Loozi, Q. arciloba, Q. diplodon, Q. odontophylla, Q. palæodrys, Q. parceserrata.
Pasaniopsis retinervis, P. sinuatus.
McClintockia heersiensis.
Salix Malaisei.
Cinnamomum ellipsoideum.
Persea palæomorpha.
Oreodaphne apicifolia.
Litsæa expansa, L. elatinervis, L.? viburnoides.
Viburnum vitifolium, V. arcinervium.
Hedera Malaisei.
Aralia Looziana, A. transversinervia, A. spinescens.
Hamamelites gelindenensis.
Dillenia palæocenica.
Celastrophyllum belgicum, C. Dewalqueanum, C. Crepini, C. serratum.
Carpolithes sulcatifrons, C. delineatus.

Pasaniopsis is a new genus of Castaninеæ. The relations of the Eocene with the newer Tertiary and Recent flora are reviewed; and it is shown that no total change has occurred from the inception of the dicotyledonous plants in the Neocomian. W. H. D.

Schmalhausen, J. Ein fernerer Beitrag zur Kenntniss der Ursastufe Ostsibiriens. [L. Carboniferous of E. Siberia.] *Bull. Ac. Imp. Sci. St. Pétersb.* t. xxv. pp. 1–17, pls. i., ii.

A short account of the beds, and a description of their flora,—*Cyclocarpus drupæformis*, *Samaropsis oblonga*, *Triphyllopteris Lopatini*, and *Neuropteris cardiopteris* being new. W. H. D.

Staub, Dr. Moriz. Nehány szo a meczek-hegység harmadkori tájképéröl. [Sketch of the Meczek Mts. in Tertiary Times.] *Földt. Közl.* köt. viii. sz. 3, 4, p. 10.

An account of the Miocene flora in this locality. The following new species are recorded—*Physolobium Ettingshausenii*, *Pterocarpus Hofmanni*, *Quercus Boeckhii*, and *Ficus Haynaldi*. W. C.

Sterzel, Dr. T. J. Ueber *Palæojulus Dyadicus* und *Scolecopteris elegans*. *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 417–426.

Palæojulus is the half of a fern-pinnule; *Scolecopteris elegans* belongs to the Rothliegende.

——. I. *Palæojulus Dyadicus*, Gein. II. *Sigillaria Menardi*, Brongn., *Sig. Preuiana*, A. Roemer, und *Sig. Brardi*, Brongn. [Notes on *Palæojulus* and *Sigillariæ*.] *N. Jahrb.* pp. 729–733.

Palæojulus is a fern = *Scolecopteris elegans* of Zenker. **Geinitz**, in postscript, denies this. The *Sigillariæ* named are varieties of *S. Brardi*. W. H. D.

Stur, D. Beiträge zur Kenntniss der Flora der Vorwelt: *a. Sphenophyllum*. *Verh. k.-k. geol. Reichs.* pp. 111, 112.

Maintains that *Sphenophyllum* is Equisetaceous and not Lycopodiaceous.

——. Beiträge zur Kenntniss der Culm und Carbonflora in Russland. *Verh. k.-k. geol. Reichs.* pp. 219–224.

Lists of the plants known from these two formations are given; and new species are indicated, but without descriptions.

Stur, D. Ueber die Oberschlesische Kohlenformation. *Verh. k.-k. geol. Reichs.* pp. 229–236.
Contains lists of the fossil plants observed.

——. *Sphenophyllum* als Ast auf einem Asterophylliten. [*Sphenophyllum* a branch of *Asterophyllite.*] *Verh. k.-k. geol. Reichs.* pp. 327, 328.
Announces the discovery of a specimen proving *Sphenophyllum* to be but a branch of *Asterophyllites.*

——. Zur Kenntniss der Fructification der *Noeggerathia foliosa,* Stur, aus dem Radnitzer Schichten des oberen Carbon in Mittel-Böhmen. [Fructification of *N. foliosa* from the Radnitz Beds of the U. Coal Measures of Central Bohemia.] *Verh. k.-k. geol. Reichs.* pp. 329–334; 1 cut in text.
Describes and figures the fructification, referring the species to the *Ophioglossum* type.

Terquem, —. Note sur les genres *Dactylopora, Polytripa,* etc. [The genera *Dactylopora, Polytripa,* &c.] *Bull. Soc. Géol. France,* sér. 3, t. vi. pp. 83, 84.
Draws attention to M. Munier-Chalmas's paper (see GEOLOGICAL RECORD for 1877, p. 375), in which these and other genera usually regarded as Foraminifera are said to be calcareous algæ, and accepts this view. G. A. L.

Toula, Fr. Neue Ansichten über die systematische Stellung der Dactyloporiden. [Systematic Position of the Dactyloporidæ.] *Verh. k.-k. geol. Reichs.* pp. 301–304.
Notes on the calcareous algæ from the L. Cretaceous marls of Pirot.

Wallace, S. J. Memorandum of a fossil wood from the Keokuk formation, Keokuk, Iowa. *Amer. Journ.* ser. 3, vol. xv. p. 396.

Williamson, Prof. W. C. On the Supposed Radiolarians and Diatomaceæ of the Coal-Measures. *Geol. Mag.* dec. ii. vol. v. pp. 461, 462.
The supposed Radiolarians are thought to be of vegetable origin; and the occurrence of Diatoms is not confirmed.

——. Coal and Coal Plants. *Coll. Guard.* vol. xxxv. p. 550; *Coal and Iron Trades Gazette,* p. 331.

Zeiller, D. Végétaux Fossiles du Terrain Houiller. [Coal Measure Flora.] *Explic. Cart. Géol. France,* t. iv. pt. 2, pls. clix.–clxxvi.

Zigno, A. de. Sulla distribuzioni geologica e geografica delle Conifere fossili. [Geological and Geographical Distribution of Fossil Conifers.] *Mem. Acad. Sc. Pad.,* July.

Zwanziger, G. A. Beiträge zur Miocänflora von Liescha in Kärnthen. [Miocene Flora of Liescha, Carinthia.] *Jahrb. nat. Landes-Museums Kärnten*, pp. 1–99, pl. 28.

36 species are recorded from the Brown Coal, including a new fern, *Pteris Prevaliensis.*

Illustrations of Cretaceous and Tertiary Plants of the Western Territories of the United States. Pp. 28; 26 pls. 4to. *Washington.*

These plates illustrate the species described by Dr. Newberry in *Ann. Lyc. Nat. Hist. New York*, 1868. The identification has been made by **Prof. Lesquereux**. 31 species of Cretaceous plants are figured on 6 plates; and 44 Miocene species, besides some uncertain fragments, on the remaining 20 plates. Prefaco by **F. V. Hayden.**

W. C.

SUPPLEMENT FOR 1874, 1876, 1877.

Andrä, Prof. [Culm-Flora, Herborn.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Sitz.* p. 122, and *Corr.-Blatt*, pp. 76, 77. [1876.]

——. [Fern from the Cusel Beds of Oberalben.] *Verh. nat. Ver. preuss. Rheinl.* Jahrg. xxxiii. *Corr.-Blatt*, pp. 134, 135. [1876.]

Carruthers, W. Address at the opening of the Session 1875–76. Address at the opening of the Session 1876–77. *Proc. Geol. Assoc.* vol. v. no. 1, pp. 1–16, 17–35. [1877.] Reprinted with the title 'Fossil Plants and their Testimony in reference to the Doctrine of Evolution.' Pp. iv, 35. 8vo. *London.* [1877.]

An exposition of the conditions under which the remains of plants have been preserved, and the nature and extent of the geological record of the vegetable kingdom, together with the bearings of these facts upon the speculations as to the origin of the present life-forms. W. C.

Castracane, —. Analisi microscopica di un deposito di diatomee dei monti Livornesi. [Microscopical Analysis of a Deposit of Diatoms in the Leghorn Mountains.] *Atti Ac. Pont. Linc.* March 1877.

Cramer, C. Fossiler Hölzer von Grönland. [Fossil Trees from Greenland.] 9 pls. 4to. *Zürich*, 1877.

Crié, L. Considérations sur la Flore Tertiaire de Fyé (Sarthe). [Tertiary Flora of Fyé.] *Bull. Soc. Linn. Norm.* sér. 3, t. i. pp. 121–123. [1877.]

Crié, L. Note sur le *Carpolites Decaisneana*, nob., des Grès Éocènes de la Sarthe. [*C. Decaisneana* from Eocene Sandstone of La Sarthe.] *Bull. Soc. Linn. Norm.* sér. 3, t. i. pp. 123–125. [1877.]

Feistmantel, Dr. Ottokar. Jurassic (Liassic) Flora of the Rajmahal Group, in the Rajmahal Hills. *Pal. Ind.* ser. ii. no. 2, pp. vi, 53–162, pls. xxxvi–xlviii. [1877.]

Literature; classification of beds; table of species; descriptions of species (for new names see below); distribution of these and analogous genera and species. Several of the species, now first described, have been named in the work noticed in the GEOLOGICAL RECORD for 1876, p. 147.

Dicksonia Bindrabunensis.
Sphenopteris membranosa.
Cyclopteris Oldhami.
Thinnfeldia indica.
Macrotæniopteris crassinervis.
Danæopsis Rajmahalensis.
Pterophyllum fissum.
Zamites proximus.
Otozamites abbreviatus, O. Oldhami.
Dictyozamites indicus.
Cycadinocarpus Rajmahalensis.
Cheirolepis indica.
Cunninghamites dubiosus.
Echinostrobus Rajmahalensis.

W. H. D.

——. Jurassic (Liassic) Flora of the Rajmahal Group, from Golapili (near Ellore), South Godavari District. *Pal. Ind.* ser. ii. no. 3, pp. 163–190; 8 pls. [1877.]

Descriptions of the species, *Pterophyllum Kingianum* and *Araucarites macropterus* being new.

——. Flora of the Jabalpur Group (Upper Gondwanas), in the Son-Narbada Region. *Pal. Ind.* ser. xi. no. 2, pp. 81–105; 14 pls. [1877.]

The following species are new:—

Podozamites spathulatus, P. Hacketi.
Otozamites angustatus, O. distans.
Pterophyllum Nerbuddaicum.
Palissya Jabalpurensis.
Araucarites Cutchensis.
Echinostrobus rhombicus.
Gingko lobata.
Taxites tenerrimus.

W. H. D.

——. Cycadaceæ in the Damuda Series and the Nürschau Gas-Coal of Bohemia. *Geol. Mag.* dec. ii. vol. iv. pp. 431, 432. [1877.]

——. [Tæniopteridæ.] *N. Jahrb.* 1877, pp. 189, 190.

——. [*Williamsonia.*] *Ibid.* p. 509.

Geyler, H. T. Ueber fossile Pflanzen von Borneo. [Fossil Plants of Borneo.] *Palæontographica,* Supplementbd. iii. pp. 60–84, pls. 11, 12. [1877.]

The following new species from Eocene beds are described:—

Litsæa Boettgeri.
Ficus Pengaronensis.
Artocarpus Verbeekianus.
Grumilea mephitidioides.
Loranthus deliquescens.
Entoneuron (n. gen.) melastomaceum.
Pterospermum gracilis.
Dipterocarpus Pengaronensis.
Hopea præcursor.
Nephelium Verbeekianum.

W. H. D.

Heer, Prof. Oswald. [Jurassic Plants, N.E. Asia.] *Gartenflora*, 1874.

Determination of 7 species of *Gingko* or *Ginkgo*.

——. Beiträge zur Jura-Flora Ost-Sibiriens und des Amurlandes. [Jurassic Flora of E. Siberia and Amoorland.] *Mém. Ac. Imp. Sci. St. Pétersb.* sér. vii. t. xxii. no. 12, pp. 122; 31 pls. [1876.]

Pp. 1–27 deal with the beds, with the range of the species in India, England, France, Spitzbergen, and Sweden, and with the climatal and other conditions. 83 species are recorded, of which 75, being new, are described and figured, with 5 new varieties of *Podozamites lanceolatus*, Lindley. For new names see INDEX OF NEW NAMES. W. H. D.

——. Flora Fossilis Helvetiæ. Die vorweltliche Flora der Schweiz. [Swiss Fossil Flora.] Lief. ii. iii pp. 45–182, pls. xxiii.–lxx. 4to. *Zurich.* [1877.]

Lief. i. is noticed in the GEOLOGICAL RECORD for 1877, p. 380. This completes the Carboniferous flora (*Calamariæ*), and deals with the Triassic (pp. 61–90), Jurassic (91–138), Cretaceous (139–146), and Eocene (147–173) forms, the following species being new:—

Asterophyllites anthracinus (Carb.).
Bernouillia helvetica (Trias).
Chondrites liasinus (Rhætic).
Pachyphyllum Meriani (Oxfordian).
Cycadeospermum Ivernoisi (Oxfordian).
Zamites Feneonis, Z. formosus, Z. Renevieri (Corallian).

The Keuper *Pecopteris angusta* is placed in a new genus, *Merianopteris*. Lief. iii. completes the Jurassic and Cretaceous flora and begins the Eocene. W. H. D.

——. Notes on Fossil Plants discovered in Grinnell Land by the English North Polar Expedition. *Geol. Mag.* dec. ii. vol. iv. pp. 571–573. [1877.]

Lesquereux, L. On the Progress of the North American Carboniferous Flora, in preparation for the Second Geological Survey of Pennsylvania. *Proc. Amer. Phil. Soc.* vol. xvi. pp. 397–416. [1877.]

Notes the plan followed in researches for the preparation of the work; the available sources of information; the materials, when and where collected for it; the point then arrived at; and the more interesting data which have to be exposed in the publication of this Flora. T. W. N.

Makowsky, —. *Caulopteris macrodiscus* in Mähren. [*C. macrodiscus*, Moravia.] *Verh. nat. Ver. Brünn*, Bd. iv. p. 28. [1876.]

Newton, E. T. [Microscopical Examination of Tasmanite.] *Proc. R. Soc. Tasm.* for 1876, pp. 4, 5 (abstract). [1877.]

Suggests the name *Tasmanites punctatus* for the plant of which the spores (?) form this lignite.

Nougarède, —. Flore fossile du bassin d'Aubin. [Fossil Flora of the Aubin Basin.] *Compt. Rend. Soc. Industr. Min. St. Etienne,* 1877, p. 16.

Saporta, Count Gaston de. [Pliocene Plants of Meximieux, S. France.] *Bull. Soc. Bot. France,* t. xxiii. [1876.]

——. Préliminaires d'une étude des chênes Européens vivants et fossiles comparés. Pt. ii. Données paléontologiques. [Comparison of Recent and Fossil Oaks of Europe.] *Compt. Rend.* t. lxxxiv. pp. 287–291. [1877.]

The Eocene oaks are of the section *Chrysobalanus*; the Miocene and Pliocene of *Lepidobalanus.*

Schenk, Dr. A. [Structure of Fossil Plants.] *Bot. Zeit.* pp. 393–401. [1877.]

Describes fruits of *Trapa* (*T. Credneri,* n. sp.) and *Gardenia* from the lignite of Tanndorf, near Leising.

Schmalhausen, J. [Petrified Wood from Mangyschlak]. *Trudi St. Pet. Obsch. Estest.* kn. viii. pp. 114, 115. [1877.]

Describes this conifer as *Sciadopityoxylon,* n. gen.

Strasburger, E. Ueber *Scolecopteris elegans,* Zenk. 2 pls. 8vo. *Jena,* 1874.

Stur, D. Zwei Notizen über die Araucariten im nordöstlichen Böhmen. [2 Notes on *Araucarites* in N.E. Bohemia.] *Verh. k.-k. geol. Reichs.* for 1877, p. 237.

Williamson, Prof. W. C. On some of the Physiological and Morphological Features seen in the Plants of the Coal Measures. *Rep. Brit. Assoc.* for 1876, *Sections,* p. 145. [1877.]

Illustrations of Fossil Plants: being an Autotype Reproduction of Selected Drawings. Prepared under the Supervision of the late **Dr. Lindley** and **Mr. W. Hutton** . . . . . and now for the first time published by the North of England Institute of Mining and Mechanical Engineers. Edited by [**Prof.**] **G. A. Lebour.** Pp. viii, 139; 64 pls. 8vo. *Newcastle-upon-Tyne,* 1877.

The plates are a selection from a large number of drawings, and those "have been chosen which represent apparently undescribed, rare, beautiful, or problematical specimens." The new species figured, but not described, are :—*Asterophyllites Huttonii*, ? Lebour (pl. 8), *Sphenopteris alciphylla*, J. Phillips, MS. (pl. 37), and *Lepidophyllum binerve*, Hutton: all from Coal Measures. W. W.

See also:—

Fliche, —. Quaternary Flora, Resson: p. 67.

Julien, —, and Count de Saporta. Permian Flora, Allier: p. 80.

Kinahan, G. H. Land Plants, Irish Silurian: p. 19.

Kušta, J. List of Plants of Herrendorf Oil-shales: p. 82.

Mietzsch, H. List of Saxon Plants: p. 144.

Nathorst, A. List of Arctic Plants, Zurich: p. 146.

Raffelt, R. List of Tertiary Plants, Bohemia: p. 102.

Schimper, W. P. *Annularia* in Protogine: p. 152.

Schütze, Dir. *Sphenopteris*, Austria: p. 108.

Siegert, T., and J. Lehmann. Lists of Fossil Plants, Chemnitz: p. 153.

Stur, D. Culm-Flora, Ostrau and Waldenburg: p. 111.

MAPS AND SECTIONS.

Sub-Editor H. B. Woodward, F.G.S.

Alpine Regions. Map to accompany "Die Dolomit-Riffe von Südtirol und Venetien. Beiträge zur Bildungsgeschichte der Alpen, von **Edmund Mojsisovics von Mojsvár.**" 6 sheets. Scale 1 : 75,000. *Vienna.*

Shows Tertiary, Cretaceous, Jurassic, Triassic, Permian, and Eruptive rocks. [Some sheets 1878, some 1879. The book 1879.]

Austro-Hungarian Empire. Geologische Karte von Oesterreich-Ungarn auf Grundlage der Aufnahme k.-k. geol. Reichsanstalt. [Geological Map, based on the Government Geological Survey.] Scale 1 : 2,016,000. By **Franz Ritter von Hauer.** Ed. 3. *Vienna.* [Ed. 2 noticed in the Geological Record for 1875, p. 358.]

Shows Alluvium, Neogene, Eocene, Chalk, Jura, Rhætic, Trias, Dyas, Coal Measures, Devonian, Silurian; as well as Serpentine, Granite, Syenite, and other igneous and metamorphic rocks. H. B. W.

——. Geologische Uebersichts-Karte der Küstenländer von Oesterreich-Ungarn und des angrenzenden Gebietes von Krain, Steiermark und Kroatien, mit besonderer Rücksicht auf die Verbreitung der Süss- u. Brackwasser Facies der Liburnischen Stufe oder der untersten Schichtengruppe der Eocänformation in Görz-gradisca Krain, Triest, Istrien, Kroatien, und Dalmatien. [Geological Map of the Austro-Hungarian Coast, with parts of Illyria, Styria, Croatia, Istria, and Dalmatia.] By **Dr. G. Stache.** Scale 1 : 1,008,000. *Vienna.*

Shows Quaternary, Neogene, Eocene, Chalk, Jura and Lias, Trias, Palæozoic, Eruptive rocks.

British Islands, Geological Map of the. By **A. C. Ramsay.** Scale 11½ miles to an inch. With Index of Colours, showing the order of superposition and approximate thickness of strata. Scale 3000 feet to an inch. Price (on rollers) 2 guineas.

Shows Pliocene, Miocene, Eocene, Cretaceous, Oolitic, Trias, Permian, Carboniferous, Old Red Sandstone and Devonian, Silurian, Cambrian, Laurentian, Volcanic and Plutonic. Geological lines drawn by **E. Best** and **J. B. Jordan.** H. B. W.

Central Europe. Geognostische Karte von Mitteleuropa. [Geological Map of Central Europe.] By **Albrecht Penck.** Small scale. Price 1½ Marks.

The different formations are shown by means of 13 colours, Drift and Alluvium being left uncoloured. For description see p. 97.

Cumberland. 9 Sheets of the *Geological Survey Map.* By [**Rev.**] **J. C. Ward.** Scale 6 inches to a mile. Price 6*s.* each.

Sheet 55. (Scarness.) Shows Alluvium, Skiddaw Slate, Igneous rocks.

Sheet 63. (Thackthwaite.) Shows Alluvium, Skiddaw Slate, Igneous rocks.

Sheet 64. (Keswick.) Shows Alluvium, L. Silurian (Volcanic Beds and Skiddaw Slate), Igneous rocks.

Sheet 65. (Dockraye.) Shows Alluvium, Carboniferous Conglomerate, Skiddaw Slate, Igneous rocks.

Sheet 69. (Buttermere.) Shows Alluvium, L. Silurian (Volcanic Beds and Skiddaw Slate), Igneous rocks.

Sheet 70. (Grange.) Shows Alluvium, L. Silurian (Volcanic Beds and Skiddaw Slate), Igneous rocks.

Sheet 71. (Whelp Side.) Shows Volcanic series of Borrowdale, Skiddaw Slate, Igneous rocks. (Price 4*s.*)

Sheet 74. (Wast Water.) Shows Alluvium, Volcanic series of Borrowdale, Igneous rocks.

Sheet 75. (Stonethwaite Fell.) Shows Alluvium, Volcanic series of Borrowdale, Igneous rocks. H. B. W.

Dannemora. Geologisk atlas öfver Dannemora grufvor. [Geological Atlas of the Iron-ore Mines at Dannemora, Sweden.] 17 sheets. Folio. *Stockholm.* By **A. E. Törnebohm.** [For descriptive text, see p. 115.]

1. Geological map of the district of Dannemora, Stenring, and Rännhäll mines. 2. Schematical map of the solid rock at the Dannemora mine district. 3. Surface plan of the mines at Dannemora. 4–13. Horizontal sections of the mines, at different levels below the surface. 14. Longitudinal sections. 15–17. Cross sections of the mines. E. E.

England and Wales. Quarter Sheet 87 S.W. of the *Geological Survey Map.* Scale an inch to a mile. Price 3*s.* (Barnsley, Wortley, Silkstone, Swinton.) By **W. T. Aveline,** [**Prof.**] **A. H. Green,** [**Rev.**] **J. C. Ward, R. Russell,** and **T. V. Holmes.**

Shows Alluvium, Permian, M. and L. Coal Measures.

——. Two Sheets of the "Horizontal Sections" of the *Geological Survey.* Scale 6 inches to a mile. Price 5*s.* each.

Sheet 113. No. 1. From the Carboniferous Limestone of Scalelands, Frizington, Cumberland, across the Skiddaw Slate of Blakeley Raise, the Grit of Lank Rigg, the Syenitic Granite of Copeland Forest; the Volcanic Rocks of Buckbarrow, Wastdale, and the Screes; the Granite of

Eskdale; and the Volcanic Rocks of Harter Fell, across the Duddon, north of Seathwaite, and over Walney Scar, to the Coniston Limestone Series, Stockdale Slates and Coniston Flags, on Torver Common, Lancashire. By **W. T. Aveline, [Rev.] J. C. Ward,** and **R. Russell.** No. 2. From the River Duddon at Black Dubb south of Hall Dunnerdale, across the Volcanic series of Caw and Lang Bank, to the Coniston Limestone Series, Stockdale Slates and Coniston Flags of Broughton Moor, Lancashire. By **W. T. Aveline.**

Sheet 121. (Continuation of Sheet 120.) Section across the Chalk of Hertfordshire, from 3 miles eastward of Ware, through the Tertiary outliers of Sacomb and Cutting Hill, by Baldock, across the Gault and Lower Greensand of Bedfordshire (E. of Biggleswade and W. of Potton) to Everton; and across the Oxford clay to a point 4 miles N.W. of Kimbolton. By **W. H. Penning.** H. B. W.

England and Wales. Four Sheets of the "Vertical Sections" of the *Geological Survey.* Scale 40 feet to an inch. Price 3*s.* 6*d.* each.

Sheet 63. Sections of the Strata of Lead Mines in the Derwent and Wear Valleys, Co. Durham. No. 1. Derwent Mines, Taylor's Shaft. 2. Derwent Mines, Routh's Shaft. 3. Derwent Mines, Jeffrey's Shaft. 4. Derwent Mines, Ramshaw Engine Shaft. 5. Derwent Mines, Pear's Shaft. 6. Rookhope W. B. Lead Mine, Bolts-Burn Engine-Shaft. 7. Cornish Hush Mine, Air Shaft. 8. Harehope Gill Mine. 9. Sharnberry Mine, Shaft A. 10. Sunnyside Mine, Bell's Shaft. 11. Sunnyside Mine, Whiteheaps Engine-shaft. 12. Slitt Mine, Engine-shaft. 13. Burtree Pasture Mine, Level Head Engine-shaft. By **David Burns.**

Sheet 64. Pit Sections and Borings of the Northumberland Coal-field. (Supplementary Sheet.) No. 1. Killingworth Colliery. 2. Coxlodge Colliery. 3. Wideopen Colliery. 4. Dinnington Colliery. 6. Netherton Colliery. 6. Hepscott. 7. Cambois Colliery. 8. Widdrngton. By **W. Topley.**

Sheet 65. Pit Sections and Borings of the South Durham Coal-field. No. 1. Adelaide Colliery. 2. S. Durham Colliery. 3. Great Chilton. 4. Bishop Middleham Colliery. 5. Little Chilton Colliery. 6. Windlestone Colliery. 7. Mainsforth Colliery. By **H. H. Howell.**

Sheet 66. Sections of the Strata of the Cumberland Lead Mines (Alston District). No. 1. Rotherhope Mine. 2. Hudgill Mine. 3. Galligill Syke Mine. 4, 5. Haggs Mine. 6. Brownley Hill Mine. 7, 8. Bentyfield Mine. 9. Dowgang Mine. 10. Guddamgill Mine. 11. Tees Side Mine. 12. Metal Band Mine. By **David Burns.** H. B. W.

Finland. Kartbok öfver Finland. [Atlas of Finland.] By **T. J. Inberg.** 8 colour-printed maps. Folio. *Helsingfors.*

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Chalk, Craie Marneuse, Craie de Rouen, and Gault. Traces the last 4 across the channel to the English Coast.

Sheet 18. Le Hâvre.

Sheet 19. Yvetot. **W. W.**

France. Carte Minéralogique, industrielle et historique du Bassin houiller du Nord. [Mineralogical, etc. Map of the Northern Coal Basin.] By — **Cannelle.**

Germany. Geologische Wandkarte von Deutschland. By **Dr. J. Hirschwald.** Scale 1 : 1,034, 500. 12 Blatt. Fol. *Leipzig.* Price 20 Marks.

Hungary. Geologische Specialkarte der Königreichs Ungarn. Blatt 9–8. 1877–78.

Ireland. 8 Sheets of the *Geological Survey Map.* Scale an inch to a mile.

Sheet 39. Small part of Mayo Erris Head, Broad Haven. By **W. B. Leonard** and **Alex. McHenry.** *Formations*:—Bog, Drift, Gneiss, and Mica Schist; Quartzite and Quartz Schist, Hornblende rock; Basalt and Doleritic Dykes.

Sheet 51. Part of Mayo (Belmullet, Binghamstown, &c., with the Islands Innish Glora, Innishkea North and Innishkea South, &c.). By **R. G. Symes, W. B. Leonard,** and **Alex. McHenry.** *Formations*:—Blown Sands; Bog and Alluvium; Drift; Mica Schist and Gneiss; Quartzite; Basalt, Dolerite, and Hornblende Rock (in Dykes); Felstone; Granite.

Sheet 54. Parts of Sligo and Mayo, including part of the S. Coast of Sligo Bay and Ballisodare Bay (Easky, Dromore West, Coolaney). By **R. G. Symes** and **J. Kilroe.** *Formations*:—Blown Sands; Bog and Alluvium; Drift; U. Carb. Limestone, "Calp" do., L. do.; L. Carb. Sandstone; Mica Schist; and Quartzite; Granite (intrusive); Hornblende-Rock, Dolerite, and Basalt (in Dykes). Glacial Striæ and Roches moutonnées indicated.

Sheet 62. Part of Mayo (Blacksod Bay and part of Achill Island). By **W. F. Mitchell** and **Alex. McHenry.** *Formations*:—Blown Sand; Bog and Alluvium; Drift Deposits; Gneiss and Mica Schist, Quartzite; Melaphyre; Basalt and Dolerite. Glacial signs and markings shown.

Sheet 64. Part of Mayo and Sligo, including the country surrounding Loughs Conn and Cullen (Ballina, Crossmolina, Foxford). By **R. G. Symes.** *Formations*:—Bog and Alluvium; Drift; Carboniferous Limestone; L. Carb. Sandstone; Old Red Sandstone; Silurian Rocks (probably U. Llandovery); Mica Schist and Crystalline Limestone; Quartzite; Hornblende Rock; Basalt and Dolerite; Granite, foliated and porphyritic; Glacial markings very numerous.

Sheet 65. Parts of Sligo and Mayo (Swineford, Tobercurry, Charlestown, Curry). By **S. B. N. Wilkinson** and **J. R. Kilroe.** *Formations*:—Bog and Alluvium; Drift; U. Carb. Limestone; Calp do.; Lower do.; L. Carb. Sandstone; Silurian (U. Llandovery); Mica

Schist, with limestone bands; Granite foliated; Felstone. Glacial markings are shown.

Sheet 68. Parts of Cavan, Leitrim, and Monaghan (Cavan, Belturbet, Ballyconnell, Killeshandra, Ballyhaise, Butters bridge; Redhill; Carrigallen, &c.). By **Hugh Leonard.** *Formations*:—Bog and Alluvium; Drift; U. Carb. Limestone; Calp do.; Lower do.; L. Carb. Sandstone; L. Silurian (Caradoc and Llandeilo); Granite, Dolerite (dykes); Felstone and Felstone porphyry; Iron-ore; Glacial markings shown.

Sheet 69. Parts of Cavan and Monaghan (Coolehill, Stradone, Shercock, &c). By **W. B. Leonard.** *Formations*:—Bog and Alluvium, Drift; Carboniferous Limestone and Grits; L. Silurian (Bala and Llandeilo) with Felspathic ash; Basalt and Dolerite; Mica trap, Mineral veins (Lead, Iron, and Manganese), and Glacial markings are shown.
E. T. H.

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London and its Suburbs, Stanford's Library Map of. Geologically coloured, by **J. B. Jordan.** The Geology compiled from the Maps and Memoirs of the Geological Survey. *London.* Scale 6 inches to a mile. [Not dated.] Fol. Atlas (24 sheets). Price £2 12*s.* 6*d.*; on roller, £4.

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W. W.

New Hampshire. Atlas of the Geological Survey. 17 plates and coloured Geological maps. Folio. *Portland.*

New South Wales, Mineralogical Map of. *Sydney.*

Also a French edition. Carte et Statistique générale.

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Sheet 46. (Felton.) By **W. Topley.** Shows Blown Sand, Alluvium, River Gravel, Coal Measures, Millstone Grit, Carb. Limestone Series, Basalt.

Sheet 54. (Longhorsley.) By **W. Topley.** Shows Alluvium, River Gravel, Glacial Drift, Carboniferous, Basalt, Sheet 55. (Ulgham.) By **W. Topley**. Shows Alluvium, River Gravel, Glacial Drift, Coal Measures, Millstone Grit, Carb. Limestone Series.

Sheet 106. (Blackpool Bridge.) By **D. Burns**. Shows Alluvium, River Gravel, Glacial Drift, Millstone Grit (3 divisions), Yoredale Rocks.

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H. B. W.

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Prussia. Geologische Karte von Preussen und den Thüringischen Staaten. [Geological Map of Prussian and Thuringian States.] Scale 1 : 25,000. *Berlin*. Gradabth. xliv. Nos. 16, 17, 22, 23, 28, and 29. See **Berendt, G.** [and Dr. **L. Dulk**], p. 49. Gr. lxxi. Nos. 5, 6, 11, and 12. See **Liebe**, p. 86.

Prussia. Geologische Karte der Provinzen Ost- u. Westpreussen, herausgegeben von der Physik.-Oekon. Gesellsch. in Königsberg. [Geological Map of E. and W. Prussia.] Sect. 15 & 16. *Königsberg*, 1878. 2 Karten in fol.

[**Rhone Basin**, Ancient Glaciers and Glacial Drift of the Central Part of the.] Atlas, by **A. Falsan** and **E. Chantre**, to a work published in 1879–80. Folio. *Lyons*, 1875.

Russia. Carte des Gîtes Miniers de la Russie d'Europe. By **V. de Moeller**. 2 sheets. Scale 1 : 4,200,000.

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Blatt 59. Frohburg. By **A. Rothpletz**. Shows Trias, Permian, Devonian, Silurian? See p. 105.

Blatt 61. Geringswalde. By **E. Dathe**. Shows Igneous, Archæan, Oligocene, and Quaternary rocks. See p. 58.

Blatt 62. Waldheim. By **E. Dathe**. Shows Alluvium, 2 divisions, Diluvium, 6; Slate formation, 2; Glimmerschiefer, 3; Granulite formation, 12. (Descriptive text, 1879.)

Blatt 94. Glauchau. By **J. Lehmann** and **H. Mietzsch**. Shows Igneous, Archæan, Permian, Oligocene, and Quaternary rocks. See p. 84.

Blatt 127. Geyer. By **F. Schalch**. Shows Igneous, Archæan, and Quaternary rocks. See p. 107. W. W. & H. B. W.

Scotland. Sheet 30 of the *Geological Survey Map*. Scale an inch to a mile. By **Prof. A. Geikie, Prof. E. Hull, Dr. J. Geikie**, and **R. L. Jack**. Price 6*s*.

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Sweden. Sveriges Geologiska Undersökning. [Geological Survey of Sweden.] 4 sheets on the scale of 1 : 50,000.

63. **Brefven.** By **E. Erdmann, G. A. Carlsson, T. W. Folcker, G. Gellerstedt, V. E. Hallin, W. Jonson, K. Kurck, L. Palmgren**, and **O. Gumælius**. The formations are :—Postglacial (6 divisions), Glacial (3 divisions), Quartzite and Mica-schist, Grey and Red Gneiss, Magnetite-gneiss, Grey and Red Granite-gneiss, Diabase, Diorite, Pegmatite, and Granite. (See p. 63.)

64. **Gottenvik.** By **A. G. Nathorst, G. Linnarsson, and E. Ekhoff.** The formations are :—Postglacial (6 divisions), Glacial (2 divisions), Grey and Red Gneiss, Garnet-gneiss, Hornblendic Gneiss, Gneiss with Diorite-schist, Gneiss with Granite, Crystalline Limestone, Diorite, Pegmatite, Granite, and Diabase. (See p. 95.)

65 and 66 [together]. **Landsort** and **Källskären.** By **A. G. Nathorst.** A number of islands in the Baltic. The formations are :—Peat, Gravel and Sand, Garnet-gneiss, Red Gneiss, Hornblendic Gneiss, Diorite, and Diabase. (See p. 95.)

67. **Herrevadskloster.** By **A. Lindström and N. O. Holst.** The formations are :—Postglacial (5 divisions), Glacial (3 divisions), Red Gneiss, Hornblendic Gneiss, Diorite-schist with garnets, Diabase and Basalt. (See p. 86.) E. E.

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United States. Geological Atlas of the U. S. Geogr. Survey W. of the 100th Meridian. Sheets 50, half of 58 and 66, 59, 67, 75, 76, 83. [1878?]

World, Geological Map of the. By **Jules Marcou.** 2nd Edit. 8 sheets. Price 16*s.*; in case £1 7*s.* 6*d.* [1878 ?]

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Sheet 21. By **J. G. Goodchild.** Shows Glacial Drift and Carboniferous.

Sheet 24. (Kirkby Ravensworth.) By **W. Gunn.** Shows Alluvium, River Gravel, Carboniferous.

Sheet 33. By **G. Barrow.** Shows Glacial Drift, L. Oolites, U., M., and L. Lias.

Sheet 38. (Marske.) By **W. Gunn.** Shows Alluvium, Glacial, Carboniferous.

Sheet 78. (Scarborough.) By **C. Fox Strangways.** Shows Glacial Drift, M. and L. Oolite.

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Millstone Grit, Yoredale Beds, and Carb. Limestone, veins of lead-ore and coal seams.

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W. W.

SUPPLEMENT FOR 1874–1877.

Asia, Eastern. Map, to show the commercial position of the productive Coal Fields of Yesso, Japan. By **B. S. Lyman** and Assistants. 1876.

Bohemia. Geologisch-montanistische Karte des Königreichs. By **A. L. Hickmann.** Scale 1 : 600,000. Blatt 4 of Geographische Statistik von Böhmen. *Prague*, 1877.

Bukowina, Geologische Uebersichtskarte der. By **K. Paul.** Fol. *Vienna*, 1877.

Colorado. A Geological Model of the Elk Mountains of Central Colorado, by **W. H. Holmes.** Scale an inch to a mile. 1874.

Japan. A Geological and Topographical Map of a rough Survey of part of the Bibai Coal Field in Yesso. By **B. S. Lyman** and Assistants. 1876.

——. Geological Map of a rough Survey of the Kayanoma Coal Fields in Yesso. By **B. S. Lyman** and Assistants. 1876.

——. A Geological and Topographical Map of a rough Survey of part of the Nuppaomayai Coal Field in Yesso. By **B. S. Lyman** and Assistants. 1876.

Moselle, Carte géologique de l'ancien département de la. By **Steff** and **Paulin.** *Metz*, 1876.

New Jersey, Northern. Geological Survey of New Jersey, showing the iron-ore and limestone districts. By **Prof. G. H. Cook.** Scale: horizontal 2 miles to an inch; vertical 2000 feet to an inch. Copy of edition of 1868. 2 Sheets in 1 vol. *New York*, 1874.

Ponza Isles. Carta geologica delle isole Ponza, Palmarola e Zannone. By **G. Dölter.** Scale 1 : 20,000. *Rome*, 1876.

St. Paul. Carte géologique de l'île. By **C. Velain.** *Paris*, 1874. 1 franc.

Switzerland. Topographischer Atlas der Schweiz im Massstab der Original-Aufnahmen vom eidgenössischen Stabsbüreau veröffentlicht. i.–viii. Lief. 89 maps. Scale 1 : 25,000, the alpine portions 1 : 50,000. 4to. *Bern*, 1870–75. "Separatausgabe der Blätter des Hochgebirges."

A reproduction of the Carte Dufour, the erratic blocks of the Jura being shown; when completed, it will consist of 546 sheets. See a notice in *Nature*, vol. vi. p. 203.

United States. Geological Atlas of the Mining Districts in the W. States and Territories. Washoe Mining District, Virginia Mines, Comstock Lode, &c. 14 geol. maps and plates. By **C. King**, **Emmons**, and **Stretch**. Fol. *Washington*, 1875.

Yorkshire. 2 Sheets of the *Geological Survey Map*. Scale 6 inches to a mile. Price 6*s*. each.

Sheet 231. (Halifax.) By **J. R. Dakyns**, **J. C. Ward**, and **R. Russell**. Shows Coal Measures and Millstone Grit. [1874.]

Sheet 219. (Kippax.) By **W. T. Aveline**, **J. C. Ward**, and **R. Russell**. [1876.] Shows Alluvium, Permian, and Coal Measures.

Zwickau. Feld- und Flötzkarte vom Kohlenrevier. By — **Arnold**. Scale 1 : 8000. *Zwickau*, 1877.

MISCELLLANEOUS AND GENERAL.

Sub-Editor E. B. Tawney, M.A., F.G.S.

Albanese, —. Sulla filosofia della storia e sulle razze umane. Le razze fossili. [Fossil Races of Men.] *Atti Ateneo Veneto*, ser. 3, vol. i. pl. 4.

Andrews, Prof. E. B. An Elementary Geology designed especially for the Interior States. Pp. 285. 8vo. *Cincinnati.*

Deals largely with the geology of the Mississippi Basin.

Anon. [" **Verifier.**"] Scepticism in Geology and the Reasons for it. An assemblage of facts from Nature opposed to the theory of "causes now in action," and refuting it. 2 Ed. Pp. xiv, 132; 8 woodcuts. 8vo. *London.* Ed. 1 noted in the Geological Record for 1877, p. 346.

Contains notes on denudation, metamorphism, &c.

Anon. [**Prof. Williamson.**] Coal and Coal-Plants. *Coll. Guard.* vol. xxxv. p. 550. (Gilchrist Lecture.)

Explains the origin of coal, and the chemical processes which have changed vegetable substances into coaly matter.

Besse, C. Petite chronique de la Terre. Carrière d'entreroches, mode de formation de la craie et du silex. 12mo. *Paris.* Price 2 frs.

Bigsby, Dr. J. J. Thesaurus Devonico-Carboniferus. The Fauna and Flora of the Devonian and Carboniferous Periods. Pp. 448. 4to. *London.*

Gives the name, author, horizon, locality, and reference for each species. Some details of local horizons and bibliography are added for each part. 1805 Devonian species in America and 3036 in Europe: 3723 Carboniferous species in America and 5060 in Europe; the total number recorded, with additions, being 14,890. J. F. B.

Boardman, Rev. G. D. Studies in the Creative Week. 12mo. *New York.*

Genesis of the Universe, of Order, of the Lands, &c.

Boué, Dr. A. Ueber die unterirdischen grossen Wasserläufe und Behälter und die Reinheit sowie Durchsichtigkeit gewisser Seen, dann über die wahrscheinliche Bildung der Seen überhaupt. [The Great Subterranean Watercourses and Reservoirs and the Transparency of certain Lakes. The probable Origin of Lakes in general.] *Sitz. k. Ak. Wiss. Wien*, Bd. lxxvii. pp. 393–402.

Brauns, —. Die Fortschritte auf dem Gebiete der Geologie. No. 3. 1876–7. [Progress in Geology, 1876–7.] *Cologne* and *Leipzig.* 8vo. Price 3*s*.

Reprinted from Klein's 'Quarterly Review of the Sciences.' Notice of memoirs and researches—the references being given in footnotes—arranged so as to form a continuous history, those relating to kindred subjects being grouped together. E. B. T.

Brett, Alfred T. Anniversary Address. *Trans. Watford Nat. Hist. Soc.* vol. 2, pt. 2, pp. 58–62.

Remarks on the circulation of matter; on hot and cold geological periods; and on Darwinism.

Broca, Prof. Paul. Les races fossiles de l'Europe occidentale. [Fossils Races of W. Europe.] *Compt. Rend. Assoc. Franç.* sess. 5, pp. 10–25.

Inaugural address, touches on geological subjects relating to the antiquity of man.

Buckley, Miss A. B. The Fairy-land of Science. Pp. viii, 244. 8vo. *London.* Price 6*s*.

Lect. v. The two great sculptors, Water and Ice, pp. 99–123; 7 woodcuts. Lect. viii. The History of a Piece of Coal, pp. 171–192; 10 woodcuts. W. T.

Burghardt, Dr. C. A. Note on the Decomposition of Water by Iron-pyrites. *Proc. Lit. Phil. Soc. Manch.* vol. 17, pp. 67–69.

Shows that sulphuretted hydrogen can be produced in the earth by the decomposition of iron-pyrites and water without the presence of organic matter. W.W.

Caithness, Earl of. Lectures on Popular and Scientific Subjects. Ed. 2. Pp. 174. 8vo. Price 2*s*. 6*d*.

One on Coal and Coal Mines.

Campbell, Dr. S. M. The Story of Creation. 12mo. *London.* 7*s*.

Chambrun de Rosemont, A. de. Le Préhistorique rajeuni par l'Histoire et la Géologie. [The Prehistoric Age revived by History and Geology.] Pp. 19. 8vo. *Nice.*

Chancourtois, A. E. B. de. Imitation automatique des chaînes de montagnes sur un globe, d'après le principe de la théorie des soulèvements. [Artificial Imitation of Mountain Ranges.] *Compt. Rend.* t. lxxxvii. p. 81.

Chouquet, —. L'ancienneté de l'Homme à l'Institut anthropologique de la Grande-Bretagne et d'Irlande. [Antiquity of Man as discussed at the Anthropological Institute.] *Mat. Hist. Homme,* sér. 2, t. ix. p. 193.

Cleminshaw, E. On the Salts of Iron, illustrative of the colours of Rock. *Proc. Dorset Field Club,* vol. 2, pp. 63–66.

Clifford, M. H. Museum (Geological List). 1 *Ann. Rep. Dulwich Coll. Sci. Soc.* pp. 23–29.

A list of fossils.

Close, Rev. M. The Extent of Geological Time. *Geol. Mag.* dec. ii. vol. v. pp. 450–455.

Comstock, Prof. T. B. An Outline of General Geology, with copious References. Pp. 82. 8vo. *Ithaca, N.Y.*

A handbook of classified statements and references, interleaved with blank pages for the use of students. The points most fully dealt with are Heat as a geological agent, Classification of Igneous and Metamorphic Rocks, Tertiary Mammals, and Prehistoric Archæology.

W. H. D.

Cotta, Bernard von. Die Geologie der Gegenwart. [Post-Tertiary Geology.] Ed. 5. Pp. 452. 8vo. *Leipzig.*

Credner, H. Traité de Géologie et de Paléontologie. [Geology and Palæontology.] Translated from the 6th German Edition by **L. Monniez.** Pp. 667. 8vo. *Paris.*

——. Elemente der Geologie. [Elements of Geology.] Ed. 4. 8vo. *Leipzig.*

See notice of Ed. 3 in the GEOLOGICAL RECORD for 1876, p. 320.

Croll, J. Cataclysmic Theories of Geological Climate. *Geol. Mag.* dec. ii. vol. v. pp. 390–398.

Crosskey, Rev. H. W. On the Microscopical Examination of Clay. *Midl. Nat.* vol. i. no. 12, pp. 328, 329.

Describes a system of drying, washing, and levigating clays, mainly for the purpose of separating minute organic remains.

Dana, Dr. J. D. New Text-book of Geology. Ed. 3. 400 woodcuts. 8vo. *New York.* 10*s.*

Davis, J. W. Summary of Geographical [Geological] Literature relating to the West Riding,' published during 1876. *Proc. W. Riding Geol. Soc.* n.s. pt. iv. pp. 318, 319.

List of geological works.

Dieulafait, L. Présence et rôle des sels ammoniacaux dans les mers modernes et dans les terrains salifères de tous les âges. [Modern and Geological Action of Ammonia Salts.] *Compt. Rend.* t. lxxxvi. pp. 1470–1472.

Drouaux, —. La Géologie et l'Exposition Géologique au Congrès du Havre. *Bull. Soc. Linn. Norm.* sér. 3, t. ii. pp. 325–340.

A résumé of work done at the Congress, giving an epitome of the more important papers.

Duncan, Prof. P. M. The Anniversary Address of the President. *Quart. Journ. Geol. Soc.* vol. xxxiv. *Proc.* pp. 34–72.

Advance of palæontology, breccia and cave faunas; elevation and subsidence, marine genera in mountain-lakes; range of implacental mammals; Indian Tertiary beds; American Vertebrata; Sponges; Echini; Cephalopoda; Actinozoa; Oceanic Circulation. W. H. D.

Engelhardt, H. Bemerkungen über den geologischen Unterricht in der Realschule I. O. [Notes on the Geological Instruction in the Leipzig High School.] *Leipzig.*

Evans, Dr. John. Address delivered to the Geological Section. (*Brit. Assoc.*) *Geol. Mag.* dec. ii. vol. v. pp. 411–423.

Refers to Irish geology, alluding to the great denudations that have taken place in Ireland, to the Miocene deposits of the N.E., to the absence of palæolithic implements. Discusses the date of implement-bearing beds in England, the possibility of a change in the position of the earth's axis, &c. W. W.

Fisher, Rev. O. On the possibility of Changes in the latitudes of places on the Earth's surface; being an appeal to Physicists. *Geol. Mag.* dec. ii. vol. v. pp. 291–297.

A reply to Hill, see p. 402.

Fuchs, Theodor. Die Mediterranflora in ihrer Abhängigkeit von der Bodenunterlage. [Relation of the Mediterranean Flora to the subjacent Rocks.] *Sitz. k. Ak. Wiss. Wien*, Bd. lxxvi. pp. 240–261.

Shows the effect of lithological differences on the vegetation.

Fürnrohr, Dr. —. Grundwasserbeobachtungen in Regensburg. *Corr.-Blatt zool.-min. Ver. Regensburg*, 32 Jahrg. pp. 145–161, plate.

Göppert, H. R. Ueber die wissenschaftliche Bedeutung der Breslauer Austellung im September 1878. [Breslau Exhibition.] *Schles. Zeitung*, no. 450–453.

Refers to coal, lignite, fossils, &c.

Gray, W. The Antiquity of Man geologically considered. *Proc. Belfast Nat. Hist. Soc.* for 1877–78, p. 111.

Grover, J. W. Conversations with Little Geologists on the Six

Days of Creation, illustrated with a Geological Chart. Pp. iv, 26, folding plate (section). 4to. *London.* 5*s.*

The plate classifies the sedimentary rocks under 7 days, or periods.

Habenicht, H. Ueber einige geologische Denkmale, welche gegen Lyells Naturgesetz sprechen. [Geological Measurements which speak against Lyell's Law.] 4to. *Berlin.*

Hall, M. On a Method of Estimating the Extent of Geological Areas. *Geol. Mag.* dec. ii. vol. v. pp. 352, 353.

Hannay, J. B. On Siliceous Fossilization. *Proc. Lit. Phil. Soc. Manch.* vol. xvii. pp. 97–103; 2 woodcuts.

Experiments with rods of *Hyalonema Smithii* in the following states:—1. Recent, quite transparent. 2. Fossil, opalescent. 3. Fossil, opaque. The principal difference between them lies in the relative proportions of water which they contain. The transparent rods lose part of their water and pass into No. 2; further loss of water induces crystallization of the silica, which passes from the organic state, and becomes transformed into the crystalline variety No. 3. F. W. R.

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Harrison, W. J. Practical Geology. Pp. 157; 42 woodcuts. 8vo. *London.* Price 2*s.*

Account of geological apparatus, field-work, &c. Descriptions of British strata from Cambrian to Recent.

Hébert, Prof. E. Guide du Géologue à l'Exposition universelle de 1878, et dans les collections publiques et privées de Paris. Pp. 151. 8vo. *Paris.*

Part I., pp. 5–38, describes the collections in stratigraphical order, It contains (pp. 15–31) a note on the collections of fossil plants of the U. Carboniferous, by **Zeiller.** Part II., pp. 39–96, describes the collections under the heads of the various countries represented. It contains (pp. 67–73) a note on fossil fish in the Muséum d'Histoire Naturelle, by **Dr. Bassani.** Mineralogy is described on pp. 97–143; a list of the minerals in the collection of the École des Mines is given on pp. 108–140. W. T.

Herbst, G. Die neuere Geologie in ihren Mitteln und Erfolgen. *Unsere Zeitung,* n. F. Bd. xiii. p. 561.

Hermite, V. H. Sur l'unité des forces en géologie. [Unity of Geological Forces.] *Compt. Rend.* t. lxxxvi. pp. 391–394, 1207–1210, 1281–1283: and under the title "Mécanique terrestre. notes sur," &c. Pp. 29. 8vo. *Nancy.*

Hill, Rev. E. On the possibility of Changes in the Earth's Axis *Geol. Mag.* dec. ii. vol. v. pp. 262–266.

Hörnes, R. Menschen als Zeitgenossen des Höhlenbären in der Miznitzer Höhle. [Man contemporary with Cave-Bear in the Miznitz Cave.] *Verh. k.-k. geol. Reichs.* p. 278.

Hunt, Dr. T. S. Chemical and Geological Essays. Ed. 2. Pp. xlvi, 489. 8vo. *Salem, U.S.* [Ed. 1 entered in the GEOLOGICAL RECORD for 1875, p. 376.]

The preface (pp. 22) is new. Alludes to the fixation of carbon from the atmosphere, and its effect on climate. Discusses the position of the Taconic rocks, and places the Lower (Taconian) as a fourth series of Pre-Cambrians, distinct from the Montalban, Huronian, and Laurentian. Alludes to recent criticism adverse to the view here adopted of the Neptunian origin of the crystalline schists. E. B. T.

——. The Origin and Succession of the Crystalline Rocks. *Geol. Mag.* dec. ii. vol. v. pp. 466–473. (*Brit. Assoc.*)

——. Sur les relations géologiques de l'atmosphère. [Geological Relations of the Air.] *Compt. Rend.* t. lxxxvii. p. 452.

Issel, Prof. A. Le caverne ossifere e i loro antichi abitanti. [Bone Caves, and their Ancient Inhabitants.] *Nuova Antologia*, ser. 2, vol. x. fasc. 18.

Jamieson, T. F. On the Distribution of Ice during the Glacial Period. *Geol. Mag.* dec. ii. vol. v. p. 390. Abstract in *Quart. Journ. Geol. Soc.* vol. xxxiv. *Proc.* pp. 76, 77.

The chief fall of snow was in the temperate zone on the borders of seas, the present areas of greatest rainfall.

Jannettaz, —. Relations entre la propagation de la chaleur et l'élasticité sonore dans les roches et dans les corps cristallisés. [Relation between the Conductivity for Heat and Sound in Rocks, &c.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 410–426.

Jones, Prof. T. R. Antiquity of Man. 7 *Rep. Croydon Micr. Club*, p. 36.

Jukes-Browne, A. J. The formation of Till. *Geol. Mag.* dec. ii. vol. v. pp. 266–269.

Keary, C. F. The Dawn of History: an Introduction to Prehistoric Study. *London.*

Keller, F. Lake Dwellings of Switzerland and other parts of Europe, translated by John Edward Lee. 2nd edition. 206 plates, 2 frontispieces, and 50 woodcuts. 2 vols. 8vo. £1 16*s.*

Kenward, J. On the Place of Archæology in Science. *Proc. Birmingham Phil. Soc.* vol. i. pp. 74–76.

Remarks on Palæontology and Primeval Man.

Kerviler, R. La chronologie préhistorique; le chronomètre préhistorique de St. Nazaire. [The Prehistoric Chronometer of St. Nazaire.] *Rev. Sci.* pp. 686–688.

Attempts time-measuring by means of estuarine relic-bearing deposits at the mouth of the Loire. (See **Mortillet**, p. 405.)

Kjerulf, Th. Stenriget og Fjeldlæren. [Mineralogy and Geology.] Ed. 3. Pp. 292. 400 woodcuts; map. 8vo. *Christiania.*

Section I. (pp. 1–88.) *a.* Minerals classified and described; their physical and other conditions noted; crystal-systems, economical value. *b.* Veins, structure and classification of rocks; their description and application; dip, faults, relative positions. Section II. Dynamical and historical geology, &c.; mechanical agents, water-action, giants' kettles, Niagara, blown sand, deltas, ripple-marks, rise and submergence of land, glaciation, &c. (pp. 91–108); chemical agents, weathering, dropping water, springs and their accumulations, rock-salt (pp. 108–117); organic agents, limestones, chalk, coral-islands, &c. (pp. 117–124); volcanic agents, volcanoes, earthquakes, interior heat, artesian springs, &c. (pp. 124–138); distribution of plant- and animal-life, and the mode of occurrence of its fossil remains (pp. 139–145); list and description of fossils (pp. 145–171); formations and their fossils, &c. (pp. 171–222). Section III. (pp. 226–292) gives an account of the Geology of S. Norway. The series are:—primitive rocks (crystalline schists and quartzite), Sparagmite, &c. (étage 1), Alumschist (étage 2), L. Silurian (étage 3, 4, and 5), U. Silurian (étage 6, 7, and 8), younger sandstone, Posttertiary deposits, eruptive rocks and ores. For comparison the geological outlines of England, Russia, Denmark, and Sweden are also given (pp. 226–242). The map shows striæ, moraines, and the routes of erratics. E. E.

Kuntze, O. Das salzfreie Urmeer und seine Consequenzen für den Darwinismus. [The Freshness of the Primæval Sea and its Relation to Darwinism.] 4to. *Leipzig.*

——. Zur ältesten Geschichte der Pflanzen. [The Oldest History of Plants.] 8vo.

Landerer, J. J. Principios de Geologia y Paleontologia. [Principles of Geology and Palæontology.] Pp. 446. 12mo. *Barcelona.*

Le Conte, Prof. Joseph. Elements of Geology, a Text Book for Colleges, and for the General Reader. Pp. 588. 8vo. *New York.*

Divided into:—1. Dynamical Geology; 2. Structural Geology; 3. Historical Geology.

Leymerie, A. Eléments de Géologie, comprenant un lexique où se trouvent indiqués les caractères zoologiques des fossiles. [Elements of Geology, with Descriptive Dictionary of Fossils.] Ed. 3. Pp. 616. 12mo. *Paris* and *Toulouse.*

Lippert, Jul. Die Erdrinde und ihre Bildung, das Wesentlichste der Geologie in gemeinfasslicher Darstellung mit vielen Holzschnitten. [The Crust of the Earth and its Formation.] Pp. 197. 8vo. *Prague.*

Lyell, Sir Charles. The Student's Elements of Geology. Ed. 3. Pp. xx, 672; 641 woodcuts. 8vo. *London.* Price 9*s.*

Revised from Ed. 2: see GEOLOGICAL RECORD for 1874, p. 358.

Maclean, J. P. A Manual of the Antiquity of Man. Ed. 7. 12mo. *Cincinnati.*

Copy of the edition of 1875.

——. Mastodon, Mammoth, and Man. 16mo. *Cincinnati.*

Malet, H. P. The Beginnings. Pp. xix, 124, plate. 8vo. *London.*

The preface criticises reviews of the author's previous work (1877). Chaps. i. The Age of this Earth; ii. Laplace; iii. Gruithuisen; iv. The Separation of the Elements. W. W.

Mello, J. Magens. Primitive Man: His Times and Companions. *Sci. Goss.* no. 160, pp. 75–78, with 4 figures; continued in no. 161, pp. 98–100, with 4 figures.

Gives some account of the animals that were the companions of Palæolithic man, and of the flint implements that are found mingled with their bones. The man of this period is compared to the Esquimaux of the present day, and was succeeded by a different race, the maker of the Neolithic weapons. Lastly the man of the Bronze age is described. A. J. J-B.

Milne, Prof. J. Coast-Ice on a rising Area. *Geol. Mag.* dec. ii. vol. v. pp. 425–428.

Reply to Linnarsson.

Morgan, C. L. Geological Time. *Geol. Mag.* dec. ii. vol. v. pp. 154–162, 199–207.

——. Physiography. *Ibid.* pp. 241–254.

Morris, Prof. John. Address at the Opening of the Session 1877–78. *Proc. Geol. Assoc.* vol. v. no. 5, pp. 191–230.

Treats of the Distribution of Fossils, Contemporary Faunas and Strata, Recurrence of Species and Colonies, and Succession of Life, with tables of the range of Cœlenterata, Echinodermata, Echinoidea, Crustacea and Annelida, Insecta, Cephalopoda Pteropoda and Heteropoda, Gasteropoda, Lamellibranchiata, Brachiopoda, Pisces, Amphibia and Reptilia, Aves, and Mammalia. W. W.

Mortillet, G. de. Origine de la Jadéïte. [Origin of Jadeite.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 38, 39.

Believes that the jade and jadeite of prehistoric implements was collected by the stone-axe men from the moraine heaps of ancient glaciers, and did not come, as is generally stated, from Asia. G. A. L.

——. Critique du Chronomètre de Penhouët (Loire-Inférieure). [Critique of the Chronometer of Penhouët, Loire-Inférieure.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 76–81.

Shows discrepancies in M. Kerviler's measurements (see above, p. 403), and that the deposits in question cannot serve as time-measurers, or as fixing the date of the end of the Bronze Age. G. A. L.

Mortillet, G. de. La chronologie préhistorique; le chronomètre préhistorique de Saint Nazaire. [Prehistoric Chronology of St.-Nazaire.] *Rev. Sci.* p. 688. See **Kerviler,** above, p. 403.

Newton, E. T. A Catalogue of the Cambrian and Silurian Fossils in the Museum of Practical Geology. Pp. 144. 8vo. *London.*

——. A Catalogue of the Cretaceous Fossils in the Museum of Practical Geology. Pp. 124. 8vo. *London.*

——. A Catalogue of the Tertiary and Post-Tertiary Fossils in the Museum of Practical Geology. Pp. iv, 90. 8vo. *London.* Price 1*s.* 8*d.*

In these three the names, authors, formations, and localities of the specimens on each tablet, as arranged in the cases, are given.

Ollier de Marichard, —. L'homme à l'époque du Grand Ours des Cavernes. [Man contemporary with the Cave Bear.] *Compt. Rend. Assoc. Franç.* sess. 6, p. 750.

Ontijd, Dr. E., and — Bosquet. Ouvrages sur les sciences naturelles exactes. Bibliothèque paléontologique, etc. *Amsterdam,* 1878.

Ormsby, R. McK. Darwin; or, God in Nature. Ed. 2. Pp. 73. 12mo. *New York.*

Proem. A New Theory in regard to the Order of Geological Formations. No Glacial Period ever existed, pp. 5–24.

Pantanelli, Dr. Bibliografia geologica e paleontologica della provincia di Siena. [Geological and Palæontological Bibliography of Sienna.] *Boll. R. Com. geol. Ital.* vol. ix. p. 300.

Pechar, J. Welt-Ausstellung 1878 in Paris. Kohle und Eisen in allen Ländern der Erde. [Coal and Iron in all Countries.] (Gruppe V, Class 43.) 8vo. *Berlin.*

Pilloy, J. Études préhistoriques. L'Atelier quaternaire du Rond-point de Busigny. [Prehistoric Studies. The Quaternary Workshop of Busigny.] Map and plate. 8vo. *St. Quentin.*

Price, Peter. The Darwinian Theory. *Trans. Cardiff Nat. Soc.* vol. ix. pp. 5–15.

Contains some geological illustrations.

Ramsay, A. The Mighty Deep. *Sci. Goss.* no. 161, pp. 97, 98.

Considers the distribution of marine animals, and shows that life-provinces existed in past as well as present times. Discusses the possibility of restoring the outlines of ancient seas. A. J. J-B.

Rath, G. vom. Ueber den Granit. 8vo. *Berlin.*

Reade, T. M. On the Geological Significance of the 'Challenger' Discoveries. *Proc. Liverpool Geol. Soc.* vol. iii. pt. iv. pp. 331–341.

The lowering of the bottom temperature of the sea over large areas shows that the secular cooling of the earth must be slow. Alludes to the Red Clay found at great depths, to the Globigerina ooze (concluding that the maximum rate of accumulation of calcareous ooze is 1 foot in 20,000 years), and to the theory that our great oceans have always been such. W. W.

——. The age of the World as viewed by the Geologist and the Mathematician. *Geol. Mag.* dec. ii. vol. v. pp. 145–154.

A criticism of Sir W. Thomson's theory.

Renevier, Prof. E. Sur la géologie des environs de Bex. [Geology of the Bex District.] *Arch. Sci. Phys. Nat.* and *Act. Soc. Helv. Sci. Nat.* sess. 60.

Historical account of publications on the subject.

Roth, Dr. Samuel. [The Porács Cave in Zips County.] *Termész. Közl.* köt. x. Nov., Dec.

Ruskin, John. Deucalion: Collected Studies of the Lapse of Waves, and Life of Stones. Part V. 8vo. *Orpington.*

Parts I.–IV. entered in Geological Record for 1876, pp. 329, 361.

Russell, R. The Antiquity of Man. *Trans. Barrow Nat. Field Club*, vol. ii. pp. 44–52.

Reviews the evidence on this subject.

Sainte-Claire Deville, Ch. Coup d'œil historique sur la Géologie et sur les Travaux d'Élie de Beaumont. [Geology and the Works of Élie de Beaumont.] Pp. vii, 599. 8vo. *Paris.*

Professorial lectures given at the College of France, 1875. Preface by **F. Fouqué.** Lectures 14 to the end relate entirely to Élie de Beaumont.

Saporta, Count de. [Lepidoptera could not have preceded Phanerogamous Plants.] *Ann. Soc. Entom. Belg.* t. xix. p. 4. [1876.]

Schœdler, F. Le Livre de la nature. 8vo. *Paris.*

Tome II. Eléments de Minéralogie, Géognosie et Géologie. Translated by **H. Welter.**

Scudder, S. H. Annual Address. *Appalachia*, vol. i. no. 4, p. 207.

Notices recent geological literature of the United States.

Selle, Albert de. Cours de Minéralogie et de Géologie. t. i. 8vo. *Paris.* Pp. 585; atlas of 147 plates.

Part 1. Introduction: figure of the earth; the atmosphere; rain and springs; the sea; rivers; continents and internal agencies;

volcanos and earthquakes; slow movements of the earth. Part 2. Mineralogy: crystallography; physical properties; chemical properties; description of species. F. W. R.

Senft, Prof. Dr. F. Synopsis der Mineralogie und Geognosie. Abth. 2. 2te Hälfte. Formationenlehre. Pp. xv, 709–1332. [Stratigraphical Geology.] 8vo. *Hanover.* Abth. 1 noticed in the GEOLOGICAL RECORD for 1875, p. 258; Abth. 2, part 1, in the GEOLOGICAL RECORD for 1876, p. 329.

Grouping of rocks into formations, pp. 709–741; their special description in order, viz. Azoic, Laurentian, Huronian, their eruptive rocks, ores, &c., pp. 742–782; Palæozoic, Cambrian to Dyas, pp. 783–935; Mesozoic, pp. 936–1103; Cænozoic, Tertiary, pp. 1104–1209; Diluvium, Alluvium, pp. 1209–1285. Under each formation are given tables of parallel beds in different countries, lists of commoner fossils, eruptive rocks, and mineral products. E. B. T.

Silvestri, O. La Scienza della Terra. Inaugurazione al Corso di Mineralogia e Geologia nell' Università di Catania nell' anno accademico. [Science of the Earth. Inaugural Lecture.] 16mo. *Catania,* 1877–78.

Sjögren, A. Om ett nytt sätt att medelst vanlig grufkompass å grufkarta framställa malmlagrens läge och riktning. [New Method of Discovering Iron-ore by the Compass.] *Geol. Fören. Stockholm Förh.* Bd. iv. pp. 43–45; 1 plate.

Skertchly, S. B. J. The Physical System of the Universe, an Outline of Physiography. Pp. xiv, 385. 8vo. *London.*

——. The Antiquity of Man. No. 1. *English Mechanic and World of Science,* vol. xxviii. no. 724, pp. 529, 530.

Refers to geological evidence.

Smiles, Dr. Samuel. Robert Dick Baker, of Thurso Geologist and Botanist. Pp. x, 438; illustrations. 8vo. *London.*

Dick's notes on the geology of Dunnet Head, pp. 90–95. Chap. ix. Discovery of a *Holoptychius*; x. Geology of the coast near Thurso; xi., xii. also geological; xiii. Dick's searchings amongst the Boulder Clay; xiv. The Iceberg Period; xv. Correspondence with H. Miller; xvi., xvii. refer to C. Peach and his work; xxi., xxii. also geological. W. W.

Southall, J. C. Man's Age in the World. *Richmond* [*U. S. A.*].

Stefani, C. de. Sulle traccie attribuite all' uomo pliocenico nel Senese. [Reputed Pliocene Man of Sienna District.]

Stewart, Dr. Alex. The Creation or Moses and Science in Harmony. Pp. v, 312. 8vo. *London.*

An attempt to reconcile the biblical with the scientific record.

Szinnyei, Josef, and Dr. Josef Szinnyei. Bibliotheca hungarica Historiæ naturalis et Matheseos Magyarország természettudományе és mathematikai könyvészete 1472–1875. [Scientific and Mathematical Bibliography of Hungary, 1472–1875.] Pp. viii, 1008. 4to. *Budapest.*

Note 16,724 works, some geological.

Taylor, Dr. J. E. Flowers: their Origin, Shapes, Perfumes, and Colours. 8vo. *London.*

Chap. ii. deals with the geological antiquity of Flowers and Insects. Reprinted ? in *Pop. Sci. Rev.* n. s. vol. ii. p. 36.

Theobald, W. What is an Erratic ? *Geol. Mag.* dec. ii. vol. v. p. 334.

Reply to Wynne.

Thorpe, Prof. T. E., and Profs. A. H. Green, L. C. Miall, Rücker, and Marshall. Coal; its history and uses. Edited by Prof. Thorpe. Pp. xii, 363. 8vo. *London.*

Chaps. i., ii. On the geology of coal, by Prof. Green; iii. On coal-plants, and iv. On the animals of the Coal-measures, by Prof. Miall; v., vi. On the chemistry of coal, by Prof. Thorpe; vii., viii. On coal as a source of warmth and power, by Prof. Rücker; ix., x. On the coal-question, by Prof. Marshall. T. W. N.

Trautschold, H. Ueber Methode und Theorien in der Geologie. [Method and Theory in Geology.] *Bull. Soc. Imp. Nat. Mosc.* t. lii. pt. 2, pp. 220–234.

Remarks on Prof. Neumayr's paper on the Russian Jura. See GEOLOGICAL RECORD for 1877, p. 85.

Utting, S. W. List of Papers communicated to the Society from the time of its establishment in 1864, until the Annual Meeting in November, 1877. *Proc. Norwich Geol. Soc.* vol. i. pp. 4–15.

Wallace, A. R. Tropical Nature, and Other Essays. Pp. xvi, 356. 8vo. *London.*

Rise and Progress of Modern Views as to the Antiquity and Origin of Man, pp. 280–303. The Distribution of Animals as indicating Geographical Changes, pp. 304–347; refers to geological evidences of changes in land and sea. W. W.

White, Henry, and T. W. Newton. A Catalogue of the Library of the Museum of Practical Geology and Geological Survey. Pp. iv, 602. 8vo. *London.* Price 15*s.*

The preface gives a history of the Library. The Catalogue is arranged alphabetically by authors, except in the following groups :—Agricultural Surveys; Catalogues; Exhibitions, Industrial; Geological Surveys; Journals; Maps; Meteorology; Mines and Mining; Museum of Prac-

tical Geology; Museums; Reports; Science and Art Department; Statistics; Transactions of Academies, Scientific Societies, &c.
T. W. N.

Whitley, N. Is "Palæolithic Man" a reality of the Past, or a Myth of the Present? Part 2. *Journal of Psychological Medicine*, n. s., vol. iv. pp. 256–275.

Gives an account of the Dordogne Caves and the Brixham Cavern, &c., and concludes that the flint implements have a geological and not an archæological origin, as every gradation can be traced from naturally worn and fractured flints to palæolithic implements. H. B. W.

Wills, T. Explosions in Coal Mines. Lecture ii. *Journ. Soc. Arts*, vol. xxvi. no. 1327, p. 470.

Nature and properties of fire-damp.

Wiltshire, Rev. Thomas. The History of Coal. Pp. 36. 8vo. *London* and *New York*.

Touches on the geological relations of coal, and traces its use from early times, giving statistics of production.

Winkler, Dr. T. C. Musée Teyler. Catalogue Systématique de la Collection Paléontologique. 3ᵉ Supplément. Pp. 127–228. 4to. *Haarlem*.

Woeikof, A. Mémoire explicatif pour les Cartes et Diagrammes. *Paris*.

Wynne, A. B. What is an Erratic? *Geol. Mag.* dec. ii. vol. v. pp. 185–187.

Zincken, C. [T.]. Die geologisch bestimmten Kohlenvorkommen des Jura, der Trias, der Dyas, des Carbons, und des Silurs nach dem relativen Alter zusammengestellt. [L. Secondary and Palæozoic Coal Beds.] *Berg- hütt. Zeit.* nos. 32, 33.

Zincken, C. T. Die Fortschritte der Geologie der Tertiärkohle, Kreidekohle, Jurakohle und Triaskohle oder Ergänzungen zu der Physiographie der Braunkohle. [General Summary of the Geology of Lignite.] *Leipzig*.

SUPPLEMENT FOR 1874–1877.

Belt, T. The Glacial Period in the Southern Hemisphere. 8vo. *London*, 1877.

Benecke, E. W., and H. Rosenbusch. Einleitende Bemerkungen über die neue geologische Landes-Aufnahme von Elsass-Lothringen.

Verzeichniss der mineralogischen und geologischen Literatur. [Introductory Remarks on the Geological Survey of Alsace-Lorraine. Catalogue of Mineralogical and Geological Works.] *Abh. geol. Special-Karte Elsass-Lothringen*, Bd. i. Heft i. pp. xxi, 77. [1875.]

Pp. i-xxi are the work of the Commission. Pp. 1-77 the list of works, chronologically arranged, from 1550, with an index of authors.

Biederman, W. v. Goethe und die sächsische Erzgebirge. *Stuttgart*, 1877.

Birks, Canon. Annual Address, 1876, on the Uncertainties of Modern Physical Science. *Vict. Inst.* Ed. 2. [1876.]

Bosizio, A. Die Geologie und die Sündfluth. Eine Studie über die Urgeschichte der Erde. [Geology and the Deluge.] Pp. 284; 4 pls. 8vo. *Mayence*, 1877.

Bourgeois, Abbé. La question de l'homme tertiaire. [Tertiary Man.] *Rev. Quest. Sci.* t. ii. livr. 2. [1877.]

Brackebusch, L. El Carbon de Piedra. [Stone-Coal.] *Cordova*, 1876.

——. Los fossiles; su origen é importancia para la ciencia. [Origin and Importance of Fossils.] Ed. 2. *Cordova*, 1876.

Bratranek, F. T. Goethes Naturwissenschaftliche Correspondenz. [Goethe's Scientific Correspondence.] 2 vols. 8vo. *Leipzig*, 1874.

Brewer, Dr. La Clef de la Science ou les Phénomènes de la Nature expliqués. [The Key of Science.] Ed. 5, by the **Abbé Moigno.** Pp. xv, 727. *Paris*, 1874. Price 4½ francs.

Campbell, J. F. The Parallel Roads of Lochaber. 8vo. *London*, 1877.

Choffat, P. Die Palæontologie, deren Methode, Nutzen und Ziel. [Palæontology, its Method, Use, and Aim.] *Oeffentl. Vortr.* iv. [1877.]

——. Beiträge zur Geschichte der Geologie. [History of Geology.] I. Geol. Repertorium. 8vo. *Leipzig*, 1877.

Dawson, Dr. J. W. Annual Address delivered to the Natural History Society [of Montreal]. *Canad. Nat.* n. s. vol. viii. p. 8. [1875.]

——. Fossil Floras and Glacial Periods. *Nature*, vol. xvi. p. 67. [1877.]

Duncan, Prof. P. M. The Anniversary Address of the President. *Quart. Journ. Geol. Soc.* vol. xxxiii. *Proc.* pp. 41-88. [1877.]

Deals with geological forces, upheaval, contortion, vulcanicity, metamorphism, time, atmosphere, blending and separation of palæontological facies (specially in India and N. America), &c. W. H. D.

Dunker, W., and K. A. Zittel. Palæontographica. General-Register zu den 20 Bänden der ersten Folge. [Index to the 20 vols. of *Palæontographica.*] Pp. 237. 4to. *Cassel*, 1876–1877.

Dupont, —. Sur l'époque quaternaire. [The Quaternary Epoch.] *Compt. Rend. Assoc. Franç.* sess. 3, p. 559. [1875.]

Ehrenberg, C. G. Mikrogeologische Studien über das kleinste Leben der Meeres Tiefgründe aller Zonen und dessen geologischen Einfluss. [Minute Organisms of the Deep Sea and their Geological Influence.] Part. 2, many plates. 4to. *Berlin*, 1875.

Estienne, Jean d'. Comment s'est formé l'univers. Partie 1. La libre pensée et l'Ecriture sainte. Partie 2. Moïse, Laplace, et les géologues. Partie 3. Les Mammifères et l'homme. Partie 4. Résumé et Conclusion. *Rev. Quest. Sci.* t. i. livr. 2, t. ii. livr. 1, livr. 2. [1877.]

Gervais, Prof. P. Cours élémentaire d'histoire naturelle. [Elementary Textbook of Natural History.] Ed. 2. *Paris*, 1877.

Comprises a short course of geology.

Green, Prof. A. H. Geology for Students and General Readers. Part 1. Physical Geology. Pp. xxvii, 552. 8vo. *London*, 1876.

Aim, scope, history and subdivisions of Geology; Mineralogy; Lithology; Petrology; Denudation; Deposition; Classification of Beds; Volcanic, Metamorphic, and Granitic Rocks; Displacements; Formation of surface; Subterranean conditions and actions; Changes of Climate. W. H. D.

Henrich, F. Vorträge über Geologie. Heft 2, pp. 99–210. *Wiesbaden*, 1877. Part 1 entered in the Geological Record for 1877, p. 350.

Deals with Earthquakes, Glaciers, the Ice Age, Springs, Rivers, and Lakes.

Herbst, G. Die Urgeschichte des Menschen und die mineralogische Deutung der alten Steinwaffen und alten Steingeräthe. [Primæval History and Mineralogical Account of Stone Implements.] *Die Natur*, 1877, no. 14.

Huguenin, J. Notice sur un système de coloriage des cartes géologiques. [System of Colouring Geological Maps.] *Arch. Néerl.* t. xii. p. 470. [1877.]

Hunt, Robert, and F. W. Rudler. Descriptive Guide to the Museum of Practical Geology, with Notices of the Geological Survey of the United Kingdom, the Royal School of Mines, and the Mining Record Office. Ed. 4. Pp. vii, 183. 8vo. *London*, 1877. Price 6*d.*

Keller, F. Etablissements lacustres. Septième Rapport. Resultat des recherches exécutées dans les lacs de la Suisse occidentale depuis l'année 1866. [W. Swiss Lake-dwellings. Researches since 1866.] 4to. *Zurich,* 1876.

Kuntze, Otto. Die Schutzmittel der Pflanzen gegen Thiere und Wetterungunst und die Frage vom salzfreie Urmeer. [Protection of Plants against Animals and Weather, and the Question of the Freshness of the Primæval Sea.] *Botan. Zeit.* 1877 (Beilage), pp. 152.

Thinks that the Coal Measures were mostly deposited in fresh water.

Lapparent, Prof A. de. L'état ~~et la~~ de nature et des îles coralliennes. *Rev. Quest. Sci.* t. ii. livr. 1. [1877.]

——. Le déplacement de l'axe des pôles. [Movement of the Polar Axis.] *Ibid.* livr. 2. [1877.]

Lasaulx, A. von. Die Einheit der geologischen Kräfte. [Unity of Geological Forces.] 53 *Jahres-B. Schles. Ges. Cultur,* p. 32. [1876.]

Laube, Dr. Gustav C. Tafeln zur Benützung beim Studium der Geologie und Paläontologie. [Geological and Palæontological Tables.] 19 pls. 4to. *Prague,* 1877. Price 2½ florins.

An atlas of fossils, &c.

Marsh, G. P. The Earth as modified by human action. A new edition of "Man and Nature." 8vo. *New York,* 1877.

Reprint of the work noticed in the GEOLOGICAL RECORD for 1874, p. 359.

Martin, K. Geologische Theorien der Jetztzeit mit einleitenden Bemerkungen aus der Vorgeschichte der Geologie. [Modern Geological Theories and Notes on the Early History of Geology.] 8vo. *Leyden,* 1877.

Mendeleeff, —. L'Origine du Pétrole. *Rev. Sci.* sér. 2, ann. 7, p. 409. [1877.]

Meunier, Victor. Les ancêtres d'Adam. Histoire de l'Homme fossile. [Fossil Man.] 8vo. *Paris,* 1875.

Morgan, C. L. Miniature Physical Geology. *Nature,* vol. xv. p. 410. [1877.]

Mortillet, —. Sur une division des alluvions quaternaires en deux grandes périodes. [Division of Quaternary Alluvia into Two Periods.] *Bull. Soc. Anthrop. Paris,* sér. 2, xii. p. 48. [1877.]

Morton, G. H. Remarks on the Introduction of Geological Maps. *Proc. Lit. Phil. Soc. Liverpool,* vol. xxxi. p. 292. [1877.]

Niessl, G. von. Bemerkungen über die Schmick'sche Hypothese der säkularen Meeresumsetzung. [Schmick's Hypothesis of the Secular Transposition of the Sea.] *Verh. nat. Ver. Brünn*, Bd. xiv. p. 68. [1876.]

Noguès, —. Les incertitudes de la paléontologie. *Compt. Rend. Assoc. Franç.* 5 sess. pp. 417, 418 (8 lines).

Orth, A. Die Untersuchung und kartographische Aufnahme des Bodens und Untergrunds grosser Städte. [Geological Surveys.] *Vierteljahrsschr. gerichtl. Med.* n. F. Bd. xx. Heft 2. [1875, 76.]

——. Die naturwissenschaftlichen Grundlagen der Bodenkunde. [Elements of Geology.] *Landw. Versuchs-Stat.*, Bd. xx. pp. 63–69. [1877.]

Palacky, —. Ueber die Remanenzen früherer geologischen Perioden in der Jetztzeit. [Relics of Earlier Geological Periods in the Present.] *Sitz. k. böhm. Ges. Wiss.* 1875, p. 215.

Perry, G. Lecture on Geology. *Rep. Croydon Micr. Club*, p. 35. [1877.]

Pomel, —. Présentation d'un Os de Rhinocéros miocène rayé. [Grooved Bone of Miocene Rhinoceros.] *Compt. Rend. Assoc. Franç*, 5 sess. pp. 639, 640. Abstract, with discussion. [1877.]

A femur of *R. paradoxus* with parallel groovings, like those that have been attributed to man. Thinks that these were made by some animal. M. de Mortillet thinks them mechanical, produced by slow prolonged rubbing. W. W.

Quenstedt, F. A. Epochen der Natur. [Epochs of Nature.] Pp. 853, woodcuts. 8vo. *Tübingen*, 1877.

A Textbook of Geology and Palæontology, treating largely of the fossil contents of the various formations.

Roujou, A. Influence des phénomènes géologiques sur les migrations humaines. [Influence of Geological Phenomena on Migrations of Man.] Abstract, with Discussion. *Compt. Rend. Assoc. Franç.* sess. 5, pp. 562–564. [1877.]

Simony, —. Die Eiszeit der Diluvialperiode der Erde und ihr Einfluss auf die organische Welt. [Effect of the Glacial Period on the Organic World.] *Schrift. Ver. nat. Kenntn. Wien*, Bd. xv. p. 475. [1875.]

Smith, Rev. H. H. A. Is the Book Wrong? A Question for Sceptics. 1877.

Refers to Brixham Cavern.

Sorby, H. C. Microscopical Investigation of Sands and Clays. *Nature*, vol. xv. p. 356. [1877.]

Suess, E. Die Zukunft des Goldes. [The Future of Gold.] Summary in *Verh. nat. Ver. preuss. Rheinl.* Folg. 4, Bd. iv. *Sitz.* 254–273. *Vienna*, 1877.

Parts 5–13 deal with the geological relations of gold-bearing rocks in Hungary, America, Europe, Asia, Australia, and Africa.

Szabo, Dr. Josef. Die Geologie in Ungarn. [Hungarian Geology.] *Lit. Ber. Ungarn*, [Bd. i.] pp. 297–320. [1877.]

Lists of papers on Hungarian Geology, including maps.

Szinnyei, Josef. Hazai és Külföldi Folyóiratok Magyar Tudományos Repertóriuma. 2 osztály. Termeszettudomány és Mathematika. I. 1778–1874. 8vo. *Budapest*, 1876. [Catalogue of Hungarian and other Scientific Papers, on the plan of that of the Royal Society of London.]

Tennant, Prof. J. Catalogue of Gems and Precious Stones bequeathed to the South-Kensington Museum by the Rev. C. H. Townshend, M.A. 8vo. *London*, 1877.

Thomson, Sir C. W. The Movement of the Soil cap. *Nature*, vol. xv. p. 359. [1877.]

Tiddeman, R. H. On the Age of the Hyæna-bed at the Victoria Cave, Settle, and its bearing on the Antiquity of Man. *Journ. Anthrop. Inst.* pp. 8. [1877.]

The co-existence of man with *Elephas antiquus*, &c. is proved by worked bones in this pre- or inter-glacial bed.

Trautschold, Prof. H. [Elements of Geology.] (In Russian.) *Moscow*, 1875.

Vallée Poussin, Prof. C. de la. Paléontologie et Darwinisme. *Rev. Quest. Sci.* t. i. livr. 1. [1877.]

Verbeek, R. D. M. Literatuur over de geologie, mineralogie en den mijnbouw van Nederlandsch Oost-Indie. [Geological and Mining Bibliography of the Dutch E. Indies.] *Jaarb. Mijnw. Ned. O.-Ind.* Jaarg. 4, deel 2, pp. 189–207. [1875.]

List of works on:—1. Java and adjacent islands. 2. Sumatra, &c. 3. Borneo, &c. 4. Banca and Billiton. 5. Celebes, &c. 6. Surrounding Islands. W. W.

——. Eerste vervolg op de opgave van geschriften handelende over de geologie, mineralogie en topografie van Nederlandsch Oost-Indie. [First Supplement to Geological Bibliography of the Dutch E. Indies.] *Jaarb. Mijnw. Ned. O.-Ind.* Jaarg. 5, deel i. pp. 190–197. [1876.]

Subdivided as the foregoing.

Virlet d'Aoust, —. De l'âge géologique de quelques filons métalliques et en particulier des filons de mercure. [Geological Age of some Metallic Veins, especially those of Mercury.] *Compt. Rend.* t. lxxxiii. pp. 289–291. [1876.]

Refers to metallic veins in France, Mexico, Central America, and Spain.

Wies, N. Populäre Geologie. Pp. 307. 8vo. *Luxembourg*, 1876.

Wilson, D. Supposed Evidence of Interglacial American Man. *Canad. Journ.* n. s. vol. xv. p. 557. [1877.]

Zincken, C. [T.?] Die ersten Erwähnungen der fossilen Kohlen in der altgriechischen Literatur. [Earliest Mention of Coal in the Ancient Greek Literature.] *Berg- hütt. Zeit.* 1877, no. 37.

Zittel, K. A. Aus der Urzeit. 2 Aufl. 187 woodcuts. 8vo. *Munich*, 1876.

Catalogue of the Publications of the United States Geological Survey of the Territories. Pp. 20. 8vo. *Washington*, 1874. Ed. 2. Pp. 38. 8vo. *Washington*, 1877.

Classifies the works under 8 heads, giving the titles of all reports and papers, dates of publication, and authors.

ADDENDA.

Sub-Editor W. H. DALTON, F.G.S.

Adams, Rev. J[ohn]. Geological Address. [Excursion to Euston.] *Trans. Newbury Field Club*, vol. ii. pp. 64, 65.

Describes the geology of the district, and the beds seen in a gravel-pit (chalk and gravel).

Amenduni, Chev. G. [The Torrents on the Coast of the Ionian Sea between Reggio and Assi, in the province of Calabria Ultra.] *Giornale del Genio civile*, an. xvi. p. 191. Abstract in *Proc. Inst. Civ. Eng.* vol. lv. pp. 364, 365.

The geology of the district described.

Anon. Coal on the Bellfield Estate, Kilmarnock. *Coll. Guard.* vol. xxxv. p. 22.

The Tourha seam, nearly 6 feet thick and containing a good coal, has been reached.

——. The Mineral Resources of the Birmingham District. *Coal and Iron Trades Gazette*, vol. iv. no. 180, p. 288.

Notices the discovery of the *Spirorbis*-Limestone at Sandwell, at a depth of 123 yards.

——. Derbyshire Minerals. *Forester*, vol. i. pp. 88–96.

Notices the chief minerals of the county, and the places where they may be found.

——. Geological Section.—Excursion to Ticknall. *Forester*, vol. i. pp. 109, 110.

Note on the Carboniferous Limestone, and the fossils found.

——. (E. T.) [**Rev. Ezekiel Thomas.**] Daeareg parth Gorllewinol Morganwg, neu drem Fewnol i Grwstyn y Ddaear. [Geology of the Northern Part of Glamorganshire, or a Peep into the Crust of the Earth.] Pp. 100. 8vo. *Cwmavon.* Price 1*s.* 6*d.* Not dated.

Ansted, Prof. D. T. Water and Water-supply, chiefly in reference to the British Islands. 8vo. *London.*

Bachmann, —. Ueber einige Eigenthümlichkeiten der Oberflachgestaltung der Mollasse. [Nature of the Surface of the Mollasse.] *Mitth. nat. Ges. Bern*, p. 54.

Notes on recent and preglacial erosion in the upper part of the Rhine Basin.

Beyrich, —. Ueber Hildebrandt's geologische Sammlung von Mombassa. *Monatsber. k. preuss. Ak. Wiss.* p. 767.

Binet, —, Hentsch —. Le Groupe de la Bernina et les Vallées Limitrophes. [Bernina Group.] *Itinerary of the Club-alpin* (? *Français* or *Schweizer*).

Contains a *résumé* of the geological structure.

Binney, E. W. Notice of a large Boulder Stone at Old Trafford, Manchester. *Proc. Manch. Lit. Phil. Soc.* vol. xvii. pp. 55–58.

A block of fine-grained gritstone, estimated to weigh over 50 tons, smoothed and scored, found in tunnelling for a sewer, in till which is about 20 feet thick. W. W.

Bittner, A. Ueber den Kalkstein der Hohen Wand. [Limestone of Hohen Wand.] *Verh. k.-k. geol. Reichs.* p. 224.

Blanford, H. F. The Rudiments of Physical Geography for the Use of Indian Schools. Ed. 7. 8vo. *London.*

See notice of Ed. 4 in the Geological Record for 1875, p. 135.

Blanford, W. T. On the Stratigraphy and Homotaxis of the Kota-Maledi (Maleri) Deposits. *Pal. Ind.* ser. 4, no. 2, pp. 17–23.

These limestones and clays of the U. Gondwána series contain Triassic Reptiles, Liassic Fish, M. Jurassic plants, and U. Jurassic invertebrata. Their age is approximately equivalent to the Jurassic series of Europe in the widest extension of the term. W. H. D.

Bonney, Prof. T. G. On Specimens of Gabbro from the Pennine Alps. *Min. Mag.* vol. ii. p. 5.

Bořický, E. Der Glimmerpikrophyr, ein neue Gesteinsart und die Libsicer Felswand. *Min. petr. Mitth.* Bd. i. p. 493.

Brandt, Al. Ein Schadelfund des *Elasmotherium.* [Discovery of Skull of *Elasmotherium.*] *Die Natur*, no. 30.

Brögger, W. C., and H. H. Reusch. On the Occurrence of Apatite in Norway. *Canad. Nat.* n. s. vol. viii. p. 424.

Bücking, H. Ueber Augitandesite in der südlichen Rhön und in der Wetterau. *Min. petr. Mitth.* Bd. i. pp. 1–13.

——. Ueber Basalt vom südöstlichen Vogelsberg und von Schwarzenfels in Hessen. *Min. petr. Mitth.* Bd. i. pp. 101–106.

Bücking, H. Ueber Augitandesit und Plagioklasbasalt. *Min. petr. Mitth.* Bd. i. p. 538.

Callaway, Dr. C. On the Fauna and Age of the Shineton Shales. *Geol. Mag.* dec. ii. vol. v. p. 332.
Replies to Linnarsson's criticisms.

Capellini, G. Inclusioni di Apatite nella roccia di Monte Cavaloro. *Rend. R. Ac. Sci. Bologna.*

——. Sulla prehnite dei monti livornesi e sui minerali che l'accompagnono. [Prehnite and associated Minerals of the Leghorn Mts.] 8vo. *Bologna.*

Carnazza, —. Intorno al cavamento di acque. [Aqueous Erosion.] *Il Circolo giuridico*, vol. ix.

Cech, C. O. Die Kochsalzgewinnung in den russischen Steppenseen. [Salt-raising in the Russian Steppes.] *Jahrb. k.-k. geol. Reichs.* Bd. xxviii. p. 619.

Choffat, P. Découverte d'ossements fossiles dans le Nagelfluh du Porrentruy. [Bones in the Porrentruy Nagelfluh.] *Emul. Jur.* p. 262.
Rhinoceros incisivus (jaw) determining the Miocene age of the rock, previously referred to Cretaceous or Eocene.

Church, Prof. A. H. On some Physical Properties of Precious Stones. *Proc. Geol. Assoc.* vol. v. no. 7, pp. 368–376.
Refers to pleochroism and specific gravity.

Close, Rev. Maxwell. On the Physical Geology of the neighbourhood of Dublin. *Proc. R. Dublin Soc.* n. s. vol. i. pp. 133–161. See p. 36.

Daubrée, C. Sur le grand nombre de joints, la plupart perpendiculaires entre eux, qui divisent le fer météorique de Sainte-Catherine (Brésil). [Joints in the Meteoric Iron of St. Catherine, Brazil.] *Compt. Rend.* t. lxxxvi. pp. 1433, 1434.

Dewalque, G. [Upper Devonian in an Artesian Well, London.] *Ann. Soc. Géol. Belg.* t. v. pp. lxv–lxvii, ci, cii.
A notice of Meux's well. Concludes that Coal Measures probably occur a few kilometres S. of London at an accessible depth.

Döll, —. Entstehung des Goldes auf dessen Lagerstätten. *Schrift. Ver. nat. Kenntn. Wien*, Bd. xviii.

Domini, — de. Ipotesi sui terremoti e sui vulcani. [Theories of Earthquakes and Volcanos.] *Riv. Mar.* an. xi. fasc. 7, 8.

Dumont, André. Mémoires sur les Terrains Crétacé et Tertiaires préparés pour servir à la description de la Carte Géologique de la Belgique. Tome II. Terrains Tertiaires. 1 Partie. [Belgian Tertiaries. Pt. i.] Pp. 439. 8vo. *Brussels.*

Lithological description, with notes of sections in Landenian, Ypresian, Bruxellian, Paniselian, Laeckenian, Tongrian, Rupelian, Bolderian, Diestian, and Scaldisian beds (Eocene to Pliocene).
W. H. D.

Dupont, E. Sur la découverte d'ossements d'*Iguanodon*, de poissons et de Végétaux dans la fosse Sainte-Barbe du charbonnage de Bernissart. [*Iguanodon*, Fish, and Plants in the Bernissart Colliery.] *Bull. Ac. Roy. Belg.* sér. 2, t. xlvi. pp. 387. See **Beneden**, p. 48.

Favre, Prof. A. Expériences sur les Effets des Refoulements ou Ecrasements Latéraux en Géologie. [Effects of Lateral Compression.] *Arch. Sci. Phys. Nat.* t. lxii. pp. 193–211, 2 pls.

Account of experiments with bedded clay, &c., with figures of the contortions produced.

Feistmantel, Dr. O. Cretaceous Plants of the Damudas. *Geol. Mag.* dec. ii. vol. v. pp. 92, 93.

Corrects his statement that Cycadaceous plants were "known long ago in the Damudas" to "collected, but not described."

Gardner, J. S. Fossil-hunting at Bournemouth. *Nature*, vol. xvii. p. 369.

Gault, William. Observations on the Geology of the Black Mountains, with special reference to the Cretaceous Rocks. *Proc. Belfast Field Club*, ser. 2, vol. i. pp. 251–261.

A general account of the Cretaceous and near-lying beds, and a detailed description of the former. Gives a coloured section from Colin Glen to Crow Glen, and comparative sections of the beds at these places, and The Allens and Whiterock, and a table comparing the reading of these beds by Tate, Barrois, and himself. E. T. N.

Goldsmith, E. On the Alkali of the Plains in Bridges Valley, Wyoming Territory. *Proc. Ac. Nat. Sci. Philadel.* p. 42.

——. Stibianite, a new mineral. *Ibid.* p. 154.

——. Staffelite from Pike's Peak, Colo. *Ibid.* p. 156.

Gorran, A. Storia sismica della provincia Veronese. Parte 1. Die fenomeni sismici e della loro genesi. [Seismic History of the Veronese. Pt. 1. Seismic Phenomena and their Origin.] 8vo. *Verona.*

Gottsche, C. Ueber das Miocän von Reinbeck und seiner Molluskenfauna. [Miocene of Reinbeck and its Molluscan Fauna.] *Verh. Ver. nat. Unt. Hamburg*, Bd. iii.

Gröger, F. Diamanten-Vorkommen in Süd-Afrika. [Occurrence of Diamonds in S. Africa.] *Verh. k.-k. geol. Reichs.* p. 403.

Grote, A. R., and W. H. Pitt. New Specimen from the Water-lime Group at Buffalo, N.Y. *Proc. Amer. Assoc.* vol. xxvi. pp. 300–302. Further particulars of *Pterygotus Cummingsiæ.*

Häberlein, E. Neuer Fund von *Archæopteryx.* [New Find of *Archæopteryx.*] *Leopoldina*, Heft xiii. p. 80.

Hankel, W. G. Ueber die thermoelektrischen Eigenschaften des Apatits, Brucits, Coelestins, Prehnits, Natroliths, Skolezits, Datoliths und Axinits. [Thermoelectric Properties of Apatite, &c.] *Ann. Phys. Chem.* 3 pls. (See notice of previous parts, p. 270.)

Hardman, E. T. On the Barytes Mines near Bantry. *Proc. R. Dublin Soc.* (n. s.) vol. i. p. 121, and *Journ. R. Geol. Soc. Ireland*, n. s. vol. v. pp. 99–103.

Describes the lodes. They are pre-Carboniferous ; and the original fissures were probably opened during the disturbances which produced flexures of the Old Red Sandstone. Argues in favour of the barytes having been introduced through the medium of hot water, barium-salts having been originally dissolved out of the neighbouring rocks.
F. W. R.

Harting, P. Déterminations thermométriques faites dans un puits de 369 mètres de profondeur à Utrecht. [Thermometric Determinations in a deep Well at Utrecht.] *Arch. Néerl.* t. xiv. p. 463.

Hauer, C. v. Die Mineralquellen von Ischl. [Mineral Springs of Ischl.] *Verh. k.-k. geol. Reichs.* p. 123.

Heer, Dr. O. Die Urwelt der Schweiz. Ed. ii. Lief. 1, 2. 4to. *Zurich.* See notice of translation of Ed. i. in GEOLOGICAL RECORD for 1876, p. 73.

Heim, A. Ueber die Stauung und Faltung der Erdrinde. [Folding, &c. of the Earth's Crust.] 8vo. *Basle.*

Hilber, V. Ueber Sculptursteinkerne. [Freestone Grains.] *Verh. k.-k. geol. Reichs.* p. 226.

Hörnes, R. Aus der Umgebung von Belluno, Feltre, und Agordo. [Notes from the Tyrol.] *Zeitschr. deutsch. österr. Alpenver.* p. 107.

——. Zur Geologie der Steiermark. [Geology of Styria.] *Verh. k.-k. geol. Reichs.* p. 304.

——. Die fossilen Säugethierfaunen der Steiermark. [Fossil Mammals of Styria.] *Mitth. nat. Ver. Steiermark* for 1877.

Hörnes, R., and V. Hilber. Sarmatische Ablagerung bei Fernitz. [Sarmatic Beds at Fernitz.] *Verh. k.-k. geol. Reichs.* p. 225.

Hull, Prof. E. On the Occurrence of Brine in the New Red Sandstone Strata at Warrington. *Trans. Manch. Geol. Soc.* vol. xiv. p. 374.

Jentzsch, Dr. A. Bericht über die Moore der Provinz Preussen. [Prussian Fens.] *Protok.* 5. *Sitz. Centr. Moor. Komm.* plate.

——. [On the Geological Maps at the Paris Exhibition.] *Schrift. phys.-ökon. Ges. Königsberg*, 1878.

——. [On some Special Geological Maps of Germany.] *Ibid.*

Jones, Prof. T. R. Geology of the Berkshire Hills, and on the Origin of their Combes. *Trans. Newbury Field Club*, vol. ii. pp. 189–191, woodcut.

Refers to the Chalk escarpment and its combes, which have been formed by springs thrown out by the Chalk Marl from the more porous overlying Chalk. W. W.

——. Caversham Chalk-pit. Katesgrove Clay-pit. The Excavations in Plummery Ditch. [Excursion to Reading.] *Trans. Newbury Field Club*, vol. ii. pp. 210–212, 218–219, 226.

Describes the geology of the district, and the changes that have taken place in it. Notices bones of ox from the cuttings of the Reading sewerage-works. W. W.

Jones, Prof. T. R., and William Whitaker. Shaw Clay-pit. [Excursion to Shaw, &c.] *Trans. Newbury Field Club*, vol. ii. p. 2–7, woodcut.

Addresses, describing the section (London Clay, Reading Beds, and Chalk), as well as the geological structure, the denudation, and the ancient seas, of the Newbury district. W. W.

Koenig, G. A. On the Association of Grossularite, Zoisite, Heulandite, and Leidyite (a new mineral). *Proc. Ac. Nat. Sci. Philadel.* p. 81.

——. Black Barite from Derbyshire. *Ibid.* p. 99.

Koninck, Prof. L. L. de. Notices sur les Minéraux Belges. VI., VII. *Bull. Ac. R. Belg.* sér. 2, t. xlvi. pp. 240–244.

Lasaulx, A. von. Petrographische Skizzen aus Irland. [Petrographical Sketches, Ireland.] *Min. petr. Mitth.* Bd. i. p. 410.

Laube, G. C. Die Stufen F, G, H des böhmischen Silurbeckens. [Bohemian Silurian Stages F, G, and H.] *Verh. k.-k. geol. Reichs.* p. 275.

——. Hilfstafeln zur Bestimmung der Mineralien. [Mineralogical Tables.] Ed. 2. 8vo. *Prague.*

Leidy, Prof. J. On Citrine or Yellow Quartz. *Proc. Ac. Nat. Sci. Philadel.* p. 40.

Lenz, Dr. O. Zur Geologie der Goldküste. [Geology of the Gold Coast.] *Verh. k.-k. geol. Reichs.* p. 119.

——. Reiseberichte aus Ostgalizien. I. [Travels in E. Galicia.] *Verh. k.-k. geol. Reichs.* p. 283.

Lesseps, Ferdinand de. Etudes de sondages, entreprises par M. Rondaire en vue de l'établissement de la mer intérieure africaine. [Borings, in view of proposed Sea in the Interior of Africa.] *Compt. Rend.* t. lxxxvii. pp. 1059, 1060.

Lewis, Rev. E. R. The Fossil Fish Localities in the Lebanon. *Geol. Mag.* dec. ii. vol. v. pp. 214–220.
Describes the localities.

Liebe, Dr. K. T. Die Lindenthaler Hyänenhöhle. [Linden Valley Hyæna Cave.] 18–20. *Jahresber. Ges. Freund. Nat. Gera*, pp. 22, pl. See Geological Record for 1877, p. 79, where add "*Arch. Anthrop.* Bd. ix. pp. 155–169 [1875 or 1876]."

Lindsay, Dr. W. L. On the Auriferous Quartz of Wanlock-head. *Proc. R. Soc. Edin.* vol. ix. p. 579.

Lionnet, —. Phosphates de Chaux Fossiles: Géologie et Origine, Applications en Agriculture. *Bull. Soc. Linn. Norm.* sér. 3, t. ii. pp. 351–382.

Liveing, Prof. —. On the Metamorphism of the Rocks of the Channel Islands. *Proc. Camb. Phil. Soc.* vol. iii. pt. iii. pp. 75–85.

Refers chiefly to Guernsey. Regards the syenite there as a metamorphosed stratified rock. Describes the volcanic dykes. Gives a section across Guernsey from N. to S. Notices the chief quarries and the granitic veins. Refers to the Jersey syenite, and to a conglomerate at Plemont, with a granitic matrix, which weathers to fantastic forms. Concludes that "granitic structure is a metamorphic character, which may be imparted either to stratified or to igneous rocks; but is not due to igneous fusion, or to any action which can occur only at a great depth." W. W.

Lodin, —. Note sur le Niveau occupé à Honfleur par l'Argile de Kimmeridge. [Level of the Kimmeridge Clay at Honfleur.] *Bull. Soc. Linn. Norm.* sér. 3, t. ii. pp. 15–18.

Luca, S. de. Recherches sur la présence du lithium dans les terres et dans les eaux thermales de la solfatare de Pouzzoles. *Compt. Rend.* t. lxxxvii. pp. 174, 175.
Wrongly given as published in Italian, p. 229, and misdated.

Maderspach, L. [Alteration of Sediments in Crystalline Slates.] *N. Jahrb.* pp. 941, 942.

Malaise, C. Sur une espèce minérale nouvelle pour la Belgique: l'Arsénopyrite ou Mispickel. [Mispickel, a new Mineral for Belgium.] *Bull. Ac. R. Belg.* sér. 2, t. xlvi. p. 881.

Manzoni, Dr. Angelo. Considerazioni Geologiche à proposito del *Pentacrinus Gastaldii.* [Geological Considerations as to *Pentacrinus Gastaldii.*] *Ann. Soc. Nat. Modena,* plate.

Matheron, Philippe. Recherches Paléontologiques dans le Midi de France. Livr. 3, 4: Pls. A. 2, B. 16, 17, C. 1, 2, 12, 20, D. 24, 25, E. 8, F. 15, 9, 12. Livr. 5, 6 (part): Pls. A. 1, C. 3, 10, 19. [See also p. 334.]

The following new species figured but not described:—

Pecten telonensis, Gervillia crispata, Avicula Dollfusi, A. Terquemi, A. Telonensis, A. Jauberti, A. obesa, Myophoria provincialis, M. affinis: from Virglorian (Trias).

Natica Arnaudi, Chemnitzia incerta, Nerinea massilliensis, Chenopus Delbosi: from Neocomian.

Montlivaltia ficus, Pygaulus marticensis, Requienia scalaris, R. arcuata, R. semirugata, Monopleura operculiformis, M. Dumortieri: from Urgonian.

Ammonites Phestus, from Barremian.

Scaphites Coquandi, S. provincialis, Anisoceras carcitanense: from Aptian.

Anisoceras Picteti, A. nerthense, A. ambiguum, Hamites exiguus, Lamna Cairoli, L. gervaisi, Oxyrhina nerthensis: from Albian.

Cyclolites fallax, C. variabilis, C. affinis: from Provencian.

Cassis nuciformis, Cerithium Daubréei, C. Mayeri, C. Baylei, C. marticense, Murex ambiguus, Fusus Martini, F. marticensis, Rostellaria provincialis, R. Zekeli, Strombus Verneuili, S. inermis: from Santonian.

Terebratula Potieri, T. Falsani, T. Dumortieri, T. Cetonensis, Lima telonensis, L. provincialis, L. Jauberti, L. Renevieri, L. Terquemi: from Virglorian (Trias).

Requienia triangularis, Monopleura rugosa: from Urgonian.

Ammonites Terquemi, A. quinquesulcatus: from Barremian.

W. W.

Mello, Rev. J. M. Les cavernes quaternaires de Creswell, Angleterre. [Creswell Caves.] *Compt. Rend. Assoc. Franç.* sess. 6, p. 702.

Messikommer,—. Die Umgebung von Wetzikon in vorgeschichtlicher Zeit. [Wetzikon in Prehistoric Times.] *Neue Züricher Zeitung,* no. 278–283.

Milne, Prof. J. Across Europe and Asia. *Geol. Mag.* dec. ii. vol. v. pp. 29–37, 62–73, two woodcuts.

A continuation; see Geological Record for 1877, p. 83.

Travelling notes on the country between Lake Baikal and across Mongolia, through China to Shanghai. Notes a volcanic country much like that of Auvergne.

Milne-Home, D. Fourth Report of the Boulder Committee. *Proc. R. Soc. Edin.* vol. ix. pp. 660, 692.

Moeller, V. de. Sur la Géologie des districts houilliers d'Ilimka et d'Outka (Oural). [Geology of the Coalfields of Ilimka and Outka, Ural Mountains.] *Bull. Soc. Géol. France*, sér. 3, t. v. pp. 559–562. Abstract by **G. Dollfus** of a work published in 1875. See above, p. 144.

Mojsisovics, Dr. E. von. Ueber die *Daonella* des Würzburger Haupt-Muschelkalkes. [*Daonella* in the Wurtemberg Trias.] *Verh. k.-k. geol. Reichs.* pp. 97, 98.
Confirms the presence of *Daonella Lommeli* in the *Discites*-limestone.

Morière, —. Discovery of the genus *Iguanodon* at Coulonges-sur-Sarthe.] *Bull. Soc. Linn. Norm.* sér. 3, t. i. p. 150.

Mortillet, G. de. Origine de la jadéïte. [Origin of Jadeite.] *Bull. Soc. Géol. France*, sér. 3, t. vi. pp. 38, 39.
Reiterates his opinion that the jade of which the French prehistoric implements are made is of local, probably morainic, origin.

Muralt, H. v. Die Bausteine der Schweiz, deren Gewicht, Festigkeit, Vorkommen und Preise. [Swiss Building Stones, their Weight, Durability, Locality, and Price.] 8vo. *Zurich.*

Naumann, H., and L. Müller. Ueber die diluvialen Ablagerungen der Umgegend von Bautzen. [Diluvial Beds of Bautzen.] *Progr. Realsch. Bautzen*, map.

Neumayr, M. Bemerkungen zur Gliederung des oberen Jura. [U. Jurassic Rocks.] *Verh. k.-k. geol. Reichs.* p. 272.

Palmer, Dr. Silas (the late). On the Antiquities found in the Peat of Newbury. *Trans. Newbury Field Club*, vol. ii. p. 123.
Bones in the peat, pp. 130–134. Appendix: Dr. Collet's and Dr. Buckland's descriptions of the peat reprinted, with 9 other notices on the subject, pp. 135–147. W. W.

Parkin, Charles. On the Perran Iron Lode in Cornwall and the Mines in the District. *Trans. N. Eng. Inst. Eng.* vol. xxvii. pp. 131–140, pls. xv.–xviii.
Contains analyses by **E. Riley** giving the metallic yield of the ores from this lode.

Paul, K. M. Aus den östlichen Karpathen. [Notes on the E. Carpathians.] *Verh. k.-k. geol. Reichs.* p. 282.

Pohlig, Dr. Hans. Ophiuren-Horizont im oberen Muschelkalk. *Zeitschr. deutsch. geol. Ges.* Bd. xxx. p. 354.
Records the discovery of two *Aspidura*-beds near Weimar. Thinks they always occupy definite horizons.

Pouyanne, —. Notice minéralogique sur les départements d'Alger et d'Oran. 8vo. *Paris.*

Puhlrott, —. Die erloschenen Vulcane am Rhein und in der Eifel. [Volcanos on the Rhine and in the Eifel.] *Jahresber. nat. Ver. Elberfeld*, Heft v. p. 1.

Reade, T. M. The Trees of the Post-Glacial Forest Beds in the Neighbourhood of Liverpool. *Trans. Hist. Soc. Lanc. Ches.* ser. 3, vol. vi. pp. 27, 28.

Refers to the excavation of a stump at the Alt mouth, showing that the trees are in the places in which they grew.

Reyer, Dr. E. Reiseskizzen über das Smrekouz-Gebirge. [Travels in the Smrekouz Mts.] *Verh. k.-k. geol. Reichs.* p. 296.

——. Notiz über die Bedeutung der Schlieren für das tektonische Verständniss der massigen Eruptiv-Gebilde. [Importance of Striations ("Schlieren") for the comprehension of Massive Eruptive Rocks.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. p. 25.

Richthofen, Baron von. Bemerkungen zur Lössbildung. [Formation of Loess.] *Verh. k.-k. geol. Reichs.* p. 289.

Riess, E. R. Untersuchungen über die Zusammensetzung des Eklogits. [Composition of Eclogite.] *Min. petr. Mitth.* Bd. i. pp. 165, 181.

Roberts, Isaac. Boring on East Hoyle Bank. *Proc. Lit. Phil. Soc. Liverpool*, no. xxxii. pp. lxxxviii–xcii.

Notices historical records of this bank, which is opposite Hoylake. At 53½ feet the pipes rested on "the thin bed of gravel which forms the surface of boulder-clay here." The bank is composed of sand with thin seams of clay. A list of the shells found is given. W. W.

——. Experiments on the Filtration of Sea-Water through Triassic Sandstone. 8vo. *Liverpool.* Pp. 9. (In advance of a Report on Circulation of Underground Waters: Brit. Assoc.)

The amount of salts in the waters of Liverpool wells has increased, showing that there is infiltration from the Mersey. The experiments, on blocks of sandstone, illustrate this. W. W.

Römer, F. Ueber einen mit dem Unterkiefer vollständig erhaltenen Schädel von *Rhinoceros tichorhinus* aus dem Diluvium von Gnadenfeld bei Cosel. *Jahresber. schles. Ges. Cultur*, p. 50.

——. Ueber das Vorkommen von Diluvial-Geschieben versteinerungsführender Sedimentär-Gesteine. *Jahresber. schles. Ges. Cultur*, p. 51.

Saise, Dr. W. Notes on the Geology of the Bristol Coal-Field, with special reference to the Gloucestershire Basin. *Trans. N. Engl. Inst. Eng.* vol. xxvii. pp. 87–97, pls. vi.–ix. See also *Coll. Guard.* vol. xxxv. pp. 108, 149.

Describes the seams of the Bristol Coal Field in descending order, giving analyses of some of them. The different seams are placed side by side on plate vii., for comparison. R. B. N.

Schlagintweit-Saktünlünski. Ueber das Auftreten von Bor-Verbindungen in Tibet. [Appearance of Boron Compounds in Thibet.] *Abh. k.-bay. Ak. Wiss.* Bd. xiii. p. 505.

Schuster, M. Ueber Auswürflinge im Basalttuffe von Reps in Siebenbürgen. [Volcanic Bombs in Transylvanian Basalttuff.] *Min. petr. Mitth.* Bd. i. p. 318.

Scudder, S. H. Entomological Notes. VI. Pp. 55; plate. 8vo. *Boston.* [Reprint of the papers from *Proc. Boston Soc. Nat. Hist.* noticed above, pp. 342, 343.]

Segre, —. Prodotti Minerale in Inghilterra nel 1877 con speciale riguardo alle contee di Northumberland e Durham. [English Mineral Products in 1877, especially from Northumberland and Durham.] *Boll. Cons.* vol. xiv.

Small, E. W. The principal Geological Features of the immediate neighbourhood of Nottingham (within about six miles of the town). *Forester,* vol. i. pp. 110, 111 (abstract).

Smith, J. L. Note sur un remarquable spécimen de siliciure de fer. [Remarkable Iron-Silicide.] *Compt. Rend.* and *Chem. News,* vol. xxxviii. p. 299.

Stache, G. Die geologische Verhältnisse des Gebietes zwischen Bormio und Passo del Tonale. *Verh. k.-k. geol. Reichs.* p. 174.

——. Neue Beobachtungen in der paläozoischen Schichtenreihe des Gailthaler Gebirges und der Karawanken. [Palæozoic Rocks of the Gailthal and Karawanken Mts.] *Verh. k.-k. geol. Reichs.* p. 306.

Struckmann, C. Geognostische Studien am östliche Deister. [Geology of the E. Deister.] 27. u. 28. *Jahresb. nat. Ges. Hannover.*

Studer, Th. Geologischen Beobachtungen auf Kerguelensland. [Geological description of Kerguelensland.] *Zeitschr. deutsch. geol. Ges.* Bd. xxx. pp. 327–350, pl. xv.

Gives a general sketch of the geology of the island, with a description of the basalts, trachytes, and volcanic deposits. The basalt breaks through the trachyte. T. G. B.

Stukenberg, A. A. [Devonian Basin of European Russia. I. Tabular List of Animals and Plants, with Notes on their Vertical and Horizontal Range.] *Trudi St. Pet. Obsch. Estest*, kn. ix. pp. 447–492.

Svedmark, E. Om Linné såsom mineralog Anteckningar. [Linné's Mineralogy.] Pp. 16. 8vo. *Upsala.*

Swanston, Wm. On the Silurian Rocks of County Down. *Proc. Belfast Field Club*, ser. 2, vol. i. appendix iv. pp. 107–123.

Notices works on the district, the lithological character of the rocks, and the fossil-localities, with the species found. The Silurian rocks belong to Llandeilo, Caradoc, L. Llandovery, and beds somewhat higher in the series. A table shows the distribution of fossils in County Down and their range in the Moffat Series of S. Scotland. E. T. N.

Tiddeman, H. Fifth Report of the Committee appointed for the purpose of assisting in the Exploration of the Settle Caves (Victoria Cave). *Rep. Brit. Assoc.* for 1877, p. 215.

Tietze, E. Das Petroleum-Vorkommen von Dragomir in der Marmara. [Occurrence of Petroleum at Dragomir, on the Sea of Marmora.] *Verh. k.-k. geol. Reichs.* pp. 322–324.

Toula, F. Ein neues Vorkommen von sarmatischen Bryozoen- und Serpulenkalk bei Hundsheim. [Sarmatian Limestone at Hundsheim.] *Verh. k.-k. geol. Reichs.* p. 298.

Traquair, Dr. R. H. On the Genus *Rhizodus*. *Proc. R. Soc. Edin.* vol. ix. p. 657.

Trautschold, H. Ueber Methode und Theorien in der Geologie. [Methods and Theories in Geology.] *N. Jahrb.* pp. 490–500; *Bull. Soc. Imp. Nat. Mosc.* t. lii. p. 220.

Chiefly deals with Russian geology, in reply to Neumayr. See Geological Record for 1877, p. 85.

Tribolet, M. F. de. Tableaux minéralogiques (formules chimiques, systêmes cristallins, duretés, poids spécifiques. [Mineralogical Tables.] 8vo. *Neuchâtel.*

Tribolet, M. F. de, and L. Rochat. Supplément aux " Etudes géologiques sur les sources boueuses (bonds) de la plaine de Bière (Vaud)." [Mud-springs of Bière.] *Bull. Soc. Sci. Nat. Neuchâtel*, t. xi. pp. 329-333.

Tromelin, Gaston de. [Researches on the Palæozoic Formations of Lower Normandy.] *Bull. Soc. Linn. Norm.* sér. 3, t. ii. pp. 32, 33.

——. [Notes on the following subjects:—Cambrian Slates of Calvados. *Cruziana*, &c., from Fosses de St. Remy-sur-Orne.

Silurian Fauna of the Grès de May. Schistes and psammites with *fucoides bilobes* of Feuguerolles.] *Bull. Soc. Linn. Norm.* sér. 3, t. ii. pp. 266–268.

Tschermak, G. Der Meteorit von Grosnaja. *Min. petr. Mitth.* Bd. i. p. 153.

Tylor, Alfred, and **Dr. A. Carpenter.** [Remarks on the Bourne.] 8 *Rep. Croydon Micr. Club*, pp. 28–30.

Vallée Poussin, Ch. de la. Note sur quelques Roches à empreintes organiques comprises dans le terrain Dévonien Inférieur du Condroz. [Organic markings in L. Devonian of Condroz.] *Ann. Soc. Sci. Bruxell.* an. 2.

Vanden Broeck, Ernest. On some Foraminifera from Pleistocene Beds in Ischia. Preceded by some Geological Remarks by **A. W. Waters.** *Quart. Journ. Geol. Soc.* vol. xxxiv. pp. 196–198.

Lists of Mollusca and Foraminifera.

Vohl, —. Analyse der Mineralquelle "Marienbrunnen" zu Huckstelle, Gemeinde Sümmern bei Iserlohn (Provinz Westphalen). [Analysis of the Mary spring, Iserlohn, Westphalia.] *Ber. deutsch. chem. Ges.* Jg. xi. no. 13.

——. Analyse des Ofner Rákóczy-Bitterwassers. [Analysis of the Rakoczy Bitter water, Ofen.] *Ibid.* (See **Molnar**, p. 286.)

Ward, Rev. J. C. On the Physical History of the English Lake-District, with Notes on the possible Subdivision of the Skiddaw Slates. *Quart. Journ. Geol. Soc.* vol. xxxiv., *Proc.* pp. 79, 80 (abstract).

Assigns 62,000,000 years as the time since the Skiddaw Slates began to be formed. Regards the beds below the Skiddaw Grit as of Tremadoc or Lingula-Flag age. W. H. D.

Weyenberg, H. Sur les chenilles fossiles. [Fossil Caterpillars.] *Petites Nouv. Entom.* no. 202, p. 253.

Refers to the larva of *Sphinx Snelleni* (1873), from Jurassic limestone of Bavaria.

Williams, W. On an Attempt to Elucidate the History of the *Cervus megaceros*, commonly called the Irish Elk. *Proc. R. Dublin Soc.* n. ser. vol. ii. part i. pp. 105–111.

The specimens (26 heads and 3 skeletons) were found at Ballybetagh, 9 miles S.E. of Dublin. Considers the immediate cause of death of these animals, the time when they existed (interglacial), and the probable cause of their extinction. R. B. N.

Williamson, W. C. The Origin of a Limestone Rock. *Nature*, vol. xvii. p. 265.

Wimmer, F. W., and J. Brunning. Vorkommen und Gewinnung der Rammelsbergische Erze und der Unterharzer Hüttenprocesse. [Occurrence, Extraction, and Smelting of the Rammelsberg Ores.] 4to. *Berlin.*

Winterbotham, W. L. The Geology of Otterhampton. *Proc. Somerset Archæol. Nat. Hist. Soc.* ser. 2. vol. iii. pt. 2, p. 57.

Notes on inroads of sea (short abstract).

Wolff, E. v. Die wichtigeren Gesteine Württembergs, deren Verwitterungsprodukte und die daraus entstandenen Ackererden. IV. Der weisse Jura (Krebsscheeren-Kalkstein und Marmorkalk. [Jurassic Rocks of Wurtemberg, their Decomposition-Products and Resulting Soils.] *Jahresb. Ver. Naturk. Württ.* Jahrg. **xxxiv.** p. 178.

Worth, R. N. The Palæontology of Plymouth. *Journ. Plymouth Inst.* vol. vi. pp. 204–210.

Gives lists, with localities, of the fossils of the Plymouth limestone, and of the Mammalia from Oreston, &c.

Wynne, A. B. Concretionary Beds or Conglomerates of Lambay Island. *Geol. Mag.* dec. vol. ii. v. p. 48.

A letter to correct the notion of these conglomerates being called concretionary bands.

Zirkel, F. [Mikrofelsite]. *N. Jahrb.* pp. 514, 515.

Geologische Tabellen und Durchschnitte über den grossen Gotthardtunnel. Lief. 5. *Zurich.*

INDEX OF NEW NAMES.

The following abbreviations of stratigraphical names are used, besides others that need no explanation:—

Cenom....	Cenomanian.	Oligoc.	Oligocene.
Cinc. ...	Cincinnati group.	Prim.	Primordial.
Gar. ...	Garumnian.	Quat.	Quaternary.
Kim. ...	Kimeridgian.	Sec.	Secondary.
Lar. ...	Laramie group.	Tith.	Tithonian.
Neog. ...	Neogene.	Turon.	Turonian.
Niag. ...	Niagara group.	Val.	Valanginian.

New generic names are printed in this type: new ordinal or sub-ordinal names in the same in CAPITALS.

Names not given as new in titles or abstracts are ignored as presumably not new.

ERRATA in the INDEX OF NEW NAMES in the GEOLOGICAL RECORD for 1877.

In **MINERALS**, add:—

Duporthite, *Collins*, 229.
Dysanalyte, *Knop*, 238.
Sonomaite, *Goldsmith*, 234.
Uranocircite, *Weisbach*, 256.

For Strenzite *read* Strengite; *for* Walnewite, Waluewite.

In **MAMMALIA**, *for* **Parabyus** *read* **Parahyus**.

Over ECHINODERMATA insert **ANNULOIDA**.

In **MOLLUSCA** transfer Cyrtolites from GASTEROPODA to HETEROPODA.

In **PLANTÆ** add:—

Erythrina Ungeri, *Ettingshausen*, Tert., 371.
Volkmannia Dawsoni, *Williamson*, Carb., 382.
Zamites parvifolius, *Geyler*, Jur., 373.

Cancel Lepidodendron Burnotense *and* Ulodendron Scoticum, *as not new, and* Wilkinsonia Pistaciæ &c., *as nowhere in the volume.*

For the —— *in* Wilkinsonia Peneæ *read* Xylomites. Dictyopteris obtusifolia *is a var. of* D. falcata, *not a species.* **Eisothecaryon** and **Illicites** are new genera.

ROCKS.

Apenninite, *Gastaldi*, 224.
Elvanyte, *Collins*, 6.
Glimmerpikrophyre, *Boricky*, 418.
Kinzigite, *Lovisato*, 89.
Proterobase, *Gümbel*, 227.
Terpitzite, *Rothpletz*, 105.
Trelaveryte, *Collins*, 6.
Trelissickyte, *Collins*, 6.

MINERALS.

Aglaite, *Julien*, 271.
Ardennite, *Lasaulx*, 273.
Barcenite, *Mallet*, 255.
Bravaisite, *Mallard*, 255.
Cleveite, *Nordenskiöld*, 257.
Cotterite, *Harkness*, 248.
Davreuxite, *Koninck & Malaise*, 82.
Dickinsonite, *Brush & Dana*, 239.
Dietrichite, *Schröckinger*, 262.
Eosphorite, *Brush & Dana*, 239.
Fairfieldite, *Brush & Dana*, 239.
Frieseite, *Vrba*, 266.
Galenobismuth, *Sjogren*, 263.

Guanajuaite, *Mallet*, 255.
Heubachite, *Sandberger*, 277.
Hofmannite, *Bechi*, 238.
Hullite, *Hardman*, 248.
Iodobromite, *Lasaulx*, 253, 273.
Keramohalite, *Hilger*, 228.
Leidyite, *König*, 252.
Lithiophilite, *Brush & Dana*, 239.
Manganosiderite, *Bayer*, 268.
Muckite, *Schröckinger*, 262.
Neudorfite, *Schröckinger*, 262.
Penwithite, *Collins*, 241.
Pseudobrookite, *Koch*, 216.
Pyrophosphorite, *Shepard*, 263.
Reddingite, *Brush & Dana*, 239.
Rhabdophane, *Lecoq de Boisbaudran*, 254.
Steelite, *How*, 249.
Stibianite, *Goldsmith*, 420.
Stützite, *Schrauf*, 262.
Szabóite, *Koch*, 216.
Thaumasite, *Nordenskiöld*, 257.
Totaigite, *Heddle*, 249.
Triploidite, *Brush & Dana*, 239.
Vietinghofite, *Damour*, 269.

MAMMALIA.

Anchitherium brachylophum, equiceps, & longicristum, *Cope*, Mioc., 293.
Antilope patulicornis & porrecticornis, *Lydekker*, Tert., 300.
Aphelops fossiger & malacorhinus, *Cope*, Mioc., 292.
Arctocephalus Williamsi, *M'Coy*, Tert., 359.
Auchenia Vitakeriana, *Cope*, Plioc., 292.
Balæna etrusca, *Capellini*, 309.
Blastomeryx borealis, *Cope*, Mioc., 292.
Bos acutifrons, planifrons, & platyrhinus, *Lydekker*, Tert., 300.
Brachymeryx feliceps, *Cope*, Mioc., 292.
Bubalus platyceros, *Lydekker*, Tert., 300.
Canis cuspigerus, *Cope*, Mioc., 293.
—— Etruscus & Falconeri, *Forsyth Major*, 296.
—— Geismarianus, *Cope*, Mioc., 293.
Capra perimensis & sivalensis, *Lydekker*, Tert., 300.
Cariacus dolichopsis, *Cope*, Quat., 292.
Cervus cylindroceros, *Dawkins*, Plioc., 295.
—— fortis, *Cope*, Plioc., 292.
—— Suttonensis & tetraceros, *Dawkins*, Plioc., 295.
Ceterhinops longifrons, *Leidy*, 311.
Cyclopidius heterodon & simus, *Cope*, Mioc., 292.
Dæodon shoshonensis, *Cope*, Mioc., 293.
Dicotyles serus, *Cope*, Mioc., 292.
Dinoziphius Carolinensis, *Leidy*, 311.
Dryolestes priscus, *Marsh*, Jur., 301.
Endoptychus cavifrons, crassiramis, & planifrons, *Cope*, Mioc., 293.
Eschrichtius polyporus, *Cope*, Mioc., 309.
Felsinotherium Gastaldi, *Zigno*, Plioc., 308.
Glyptodon rudis, *Gervais*, 297.
Helaletes latidens, *Osborne* &c., Eoc., 302.
Hoplophorus discifer, *Gervais*, 297.
Hydaspitherium megacephalum, *Lydekker*, Tert., 300.
Hyopotamus guyotianus, *Cope*, Mioc., 293.
Hyrachyus crassidens, imperialis, & intermedius, *Osborne* &c., Eoc., 302.
Ithygrammodon cameloides, *Osborne* &c., Eoc., 302.
Leurocephalus cultridens, *Osborne* &c., Eoc., 302.
Machærodus brachyops, *Cope*, Mioc., 293.
Machærodus necator, *Gervais*, 297.
—— strigidens, *Cope*, Mioc., 293.
Megencephalon primævus, *Osborne* &c., Eoc., 302.
Meniscomys hippodus & multiplicatus, *Cope*, Mioc., 293.
Mesoteras Kerrianus, *Cope*, Mioc., 309.
Mylagaulus sesquipedalis, *Cope*, Mioc., 292.
Mylodon sodalis, *Cope*, Plioc., 292.
Pithecistes brevifacies, *Cope*, Mioc., 292.
Pleurolicus sulcifrons, *Cope*, Mioc., 293.
Prophoca proxima & Rousseaui, *Beneden*, Mioc., 309.
Rosmarus obesus, *Leidy*, 311.
Steneofiber gradatus, *Cope*, Mioc., 293.
Stylonus seversus, *Cope*, Mioc., 293.
Taxidea sulcata, *Cope*, Plioc., 292.
Temnocyon altigenis, *Cope*, Mioc., 293.
Tetralophodon campestre, *Cope*, Mioc., 292.
Ticholeptus zygomaticus, *Cope*, Mioc., 292.
Uintatherium Leidyianum & princeps, *Osborne* &c., Eoc., 302.

AVES.

Anser hypsibatus, *Cope*, Plioc., 292.
Argillornis longipennis, *Owen*, Eoc., 303.
Cygnus paloregonus, *Cope*, Plioc., 292.
Graculus macropus, *Cope*, Plioc., 292.
Palæospiza bella, *Allen*, Mioc., 289.

REPTILIA & BATRACHIA.

Allosaurus lucaris, *Marsh*, Jur., 300.
Amphicœlias altus, fragillimus, & latus, *Cope*, Cret., 293, 294, 310.
Amphicotylus Lucasii, *Cope*, 292.
Amphiemys oxysternum, *Cope*, Perm., 310.
ANOMODONTA, *Cope*, 294.
Atlantosaurus immanis, *Marsh*, Jur., 300.
Bolosaurus rapidens & striatus, *Cope*, Perm., 293.
Brachyrophus altarkansanus, *Cope*, 292.
Camarasaurus supremus, *Cope*, Cret., 293, 310.
Caulodon leptoganus, *Cope*, Cret., 293.
Chelonides robusta, *Portis*, Kim., 305.
Chondrosteosaurus gigas & magnus, *Owen*, 311.
Cistudo marnochii, *Cope*, Plioc., 292.
Clepsydrops natalis, *Cope*, Perm., 293.
Creosaurus atrox, *Marsh*, Jur., 300.
Crocodilus parvus, *Osborne, &c.*, Eoc., 302.
Diadectes latibuccatus, molaris, & sideropelicus, *Cope*, Perm., 293, 294.
Didosaurus mauritianus, *Günther*, 310.
Dimetrodon cruciger, gigas, incisivus, & rectiformis, *Cope*, Perm., 293, 294.
Diplodocus longus, *Marsh*, Jur., 301.
Ectycynodon ordinatus, *Cope*, Perm., 293.
Embolophorus fritillus, *Cope*, Perm., 293.
Empedocles alatus, *Cope*, Perm., 293.
Epanterias amplexus, *Cope*, Cret., 294.
Epicordylus erythroliticus, *Cope*, Perm., 293.
Euchyrosaurus Rochei, *Gaudry*, Perm., 297.
Eupachemys obtusus, *Leidy*, 311.
Eurysaurus Raincourti, *Gaudry*, Jur., 297.
Gecko Newtonii, *Günther*, 310.
Hadrosaurus tripos, *Cope*, Mioc., 309.
Hypsibema crassicauda, *Cope*, Mioc., 309.
Hypsirophus discurus, *Cope*, Cret., 292.
Iguanodon Exogirarum, *Fritsch*, Cret., 297.
Labyrinthodon Rütimeyeri, *Wiedersheim*, Trias, 308.
Laosaurus celer & gracilis, *Marsh*, Jur., 300.
Metarmosaurus fossatus, *Cope*, Perm., 293.
Morosaurus impar, *Marsh*, Jur., 300.
Nothodon lentus, *Marsh*, Perm., 301.
Ophiacodon grandis & mirus, *Marsh*, Perm., 301.
Palæosaurus fraserianus, *Cope*, Trias, 293.
Pariotichus brachyops, *Cope*, Perm., 293.
Parioxys ferricolus, *Cope*, Perm., 293.
Pelycosauria, *Cope*, 294.
Petrosuchus levidens, *Owen*, Purb., 304.
Plesiochelys minor, *Portis*, Kim., 305.
Pleuronoura Pellati, *Gaudry*, Perm., 297.
Poikilopleuron pusillus, *Owen*, 311.
Polydectes biturgidus, *Cope*, Mioc., 309.
Probatrachus vice[n]tinus, *Peters*, Tert., 311.
Procolophodon cuniceps, Griersoni, & laticeps, *Seeley*, Trias, 306.
Pseudemys bisornatus, *Cope*, Plioc., 292.
—— Hillii, *Cope*, Mioc., 292.
Pterodactylus montanus, *Marsh*, Jur., 301.
Rhachitomus valens, *Cope*, Perm., 293.
Sphenacodon ferus, *Marsh*, Perm., 301.
Suchoprion aulacodus, *Cope*, 293.
Symphyrophus musculosus, *Cope*, Cret., 293.
Testudo ephippium, *Günther*, Recent, 310.
Thecodontosaurus gibbidens, *Cope*, Trias, 293.
Theromorpha, *Cope*, 294.
Theropleura retroversa, triangulata, & uniformis, *Cope*, Perm., 293.
Tichosteus æquifacies, *Cope*, 292.
Trichophanes Copei, *Osborne, &c.*, Eoc., 302.
Trimerorhachis insignis, *Cope*, Perm., 293.
Tropidemys Seebachii, *Portis*, Kim., 305.
Xerobates cyclopygius & orthopygius, *Cope*, Mioc., 292.
Zatomus sarcophagus, *Cope*, Mioc., 309.
Zatrachis serratus, *Cope*, Perm., 293.

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Acrodobatis obliquus & serra, *Leidy*, Tert., 311.
Actinochiri, *Cope*, 294.
Alburnops angustarcus & gibbarcus, *Cope*, Plioc., 292.
Alosa bohemica, *Fritsch*, Cret., 297.
Anchybopsis altarcus & breviarcus, *Cope*, Plioc., 292.
Antacanthus insignis, *Dewalque*, Carb., 296.
Aprion brevis & stellatus, *Probst*, Mioc., 305.
Archæobatis gigas, *Newberry*, Carb., 301.
Archichthys Portlockii, *Traquair*, 307.
Benedenius, *Traquair*, Carb., under *Koninck*, 299.
Carcharodon gigas, *Philippi*, Tert., 305.
Ceratodus Güntheri, *Marsh*, Jur., 300.
—— polymorphus, *Miall*, Rhætic, 301.
Chimæra furcata, *Fritsch*, Cret., 297.
Chrysophrys aurata, *Bosniaski*, Mioc., 290.
Cochliodus tenuis, *Koninck*, Carb., 299.
Ctenacanthus compressus, *Newberry*, Dev., 301.
—— maximus, *Koninck*, Carb., 299.
Ctenodus dialophus, periprion, & porrectus, *Cope*, Perm., 293.
Dapedoglossus æquipinnis, *Cope*, 291.
Daptinus intermedius, *Newton*, Cret., 302.
Deltodus Sandalinus, *Koninck*, Carb., 299.
Dercetis Reussii, *Fritsch*, Cret., 297.
Dinichthys minor, *Newberry*, Dev., 301.
Diplognathus mirabilis, *Newberry*, Dev., 301.
Diplurus longicaudatus, *Newberry*, Trias, 301.
Edaphodon crassus, laminosus, & Reedi, *Newton*, Cret., 302.
Egertonia gaultina, *Cornuel*, Gault, 294.
Elasmognathus Willettii, *Newton*, Cret., 302.
Ellipsodus incisus, *Cornuel*, Neoc., 294.
Elonichthys Fritschii, *Friedrich*, Perm., 69.
Galeus affinis, cristatus, & tenuis, *Probst*, Mioc., 305.
Glyptopomus Sayrei, *Newberry*, Dev., 301.
Gobius sarmatianus, *Bosniaski*, Mioc., 290.
Gonatodus Toilliezi, *Koninck*, Carb., 299.
Gryphodobatis uncus, *Leidy*, Tert., 311.
Gyrodus syriacus, *Fraas*, Turon., 325.
Gyrolepis Alberti & tenuicostatus, *Lundgren*, Lias, 334.
Halec Lauboi, *Fritsch*, Cret., 297.
Helodus curvatus, *Koninck*, Carb., 299.
Hemipristis Klunzingeri, *Probst*, Mioc., 305.
Hemitrichas schisticola, *Peters*, Tert., 311.
Hypoprion singularis, *Probst*, Mioc., 305.
Ichthyotringa tenuirostris, *Cope*, Cret., 291.
Ischyodus incisus, latus, & planus, *Newton*, Cret., 302.
Lamna Cairoli & Gervaisi, *Mathéron*, Albian, 424.
—— striatella & striola, *Zareczny*, Cret., 122.
Lepidenteron longissimum, *Fritsch*, Cret., 297.
Lepidotus calcaratus, *Egerton*, Jur., 296.
—— longidens, *Cornuel*, Neoc., 294.
—— pachylepis, *Egerton*, Jur., 296.
Leptotrachelus longipinnis, *Cope*, Cret., 291.
Macropoma forte, *Fritsch*, Cret., 297.
Myliobatis salentinus, *Botti*, Mioc., 291.
Notidanus Thevenardi, *Delfortrie*, Mioc., 295.
Oxyrhina Agassizii, *Lawley*, 299.
—— Nerthensis. *Mathéron*, Albian, 424.
—— Winkleri, *Vincent*, Eoc., 365.
Pachycormus Westermani, *Winkler*, Lias, 308.
Palæorniscus Hancocki, *Atthey*, Carb., 309.
Petrodus Ryckholti, *Koninck*, Carb., 299.
Platysomus insignis, *Koninck*, Carb., 299.
Pneumatosteus nahunticus, *Cope*, Mioc., 309.
Pœcilodus elegans, *Koninck*, Carb., 299.
Portheus angulatus, *Cope*, Mioc., 309.
Prionodon angustidens, armatus, Baltringensis, deformis, modestus, similis, speciosus, & tumidus, *Probst*, Mioc., 305.
Priscacara clivosa, oxyprion, & Pealei, *Cope*, Tert., 291.
Prolebias stenoura, *Sauvage*, Tert., 311.
Ptycholepis Marshii, *Newberry*, Trias, 301.
Pycnodus affinis, *Mathéron*, Neoc., 334.
—— disparilis, heterotypus, imitator, Mantelli, profusidens, quadratifer, sculptus, & varians, *Cornuel*, Neoc., 294.
Rhadinichthys Grossarti, Monensis, & Wardi, *Traquair*, Carb., 307.
Rhinobatis primævus, *Zigno*, Eoc., 308.
Rhizodus ornatus, *Traquair*, Carb.. 307.
Rhynchodus occidentalis, *Newberry*, Dev., 301.

Sandalodus robustus, *Koninck*, Carb., 299.
Sardinius lineatus, nasutulus, & percrassus, *Cope*, Cret., 291.
Saurichthys acuminata, *Lundgren*, Lias, 334.
Saurocephalus Woodwardi, *Davies*, Cret., 295.
Scoliodon Kraussi, *Probst*, Mioc., 305.
Semionotus Nilssoni, *Lundgren*, Lias, 334.
Semiophorus gigas, *Zigno*, Eoc., 308.
Serratodus elegans, *Koninck*, Carb., 299.
Spaniodon simus, *Cope*, Cret., 291.
Sphyræna integra & lævis, *Probst*, Mioc., 305.
Stichacanthus Cœmansi, *Koninck*, Carb., 299.
Streblodus tenerrimus, *Koninck*, Carb., 299.
Tetragonolepis analis, Oldhami, & rugosus, *Egerton*, Jur., 296.
Tomodus Craigi & laciniatus, *Koninck*, Carb., 299.
Torpedo Egertoni, *Zigno*, Eoc., 308.
Triænaspis virgulatus, *Cope*, Cret., 291.
Trichophanes Copei, *Osborne, &c.*, Mioc., 302.
—— foliarum, *Cope*, Tert., 291.
Xenodolamia pravus & simplex, *Leidy*, Tert., 311.
Xiphodolamia ensis, *Leidy*, Tert., 311.
Xystrodus alatus, *Koninck*, Carb., 299.

MOLLUSCA.

CEPHALOPODA.

Acanthoceras sarthacensis, *Bayle*, Cret., 315.
Ægoceras Albense, Althii, Alutæ, & tenuicostatum, *Herbich*, Lias, 76.
Aganides Fourneti, *Bayle*, Dev., 315.
Ammonites alternoides, *Nikitin*, 339.
—— antigona & assimilis, *Mathéron*, Neoc., 334.
—— Bladensis, *Barrois & Guerne*, Cret., 315.
—— Boutini, *Mathéron*, Neoc., 334.
—— Briarti, *Barrois & Guerne*, Cret., 315.
—— Concyana, *Barrois*, Cret., 6.
—— Corneti, *Barrois & Guerne*, Cret., 315.
—— Elatinæ, *Nikitin*, 339.
—— eumorphe & gemmiferus, *Mathéron*, Neoc., 334.
—— Hildebrandti, *Beyrich*, Jur., 352.
—— Juddii, *Barrois & Guerne*, Cret., 315.
Ammonites œdipus, perelegans, perinflatus, Phestus, Piettei, Potieri, & quinquesulcatus, *Mathéron*, Neoc., 334, 424.
—— rotundatus & Rouilleri, *Nikitin*, 339.
—— Soulieri & stephanophorus, *Mathéron*, Neoc., 334.
—— tenuicostatus, *Nikitin*, 339.
—— Terquemi, *Mathéron*, Neoc., 424.
—— tuberculato-alternans, *Nikitin*, 339.
—— utriculus, *Mathéron*, Neoc., 334.
Anisoceras ambiguum, *Mathéron*, Cret., 424.
—— carcitanense, *Mathéron*, Neoc., 424.
—— nerthense & Picteti, *Mathéron*, Cret., 424.
Aptychus bulgaricus, *Toula*, Jur., 156.
Arietites Douvillei, *Bayle*, Cret., 315.
Aspidoceras Báthori, *Herbich*, Tith., 76.
Aspidoceras Choffati, *Loriol*, Jur., 333.
—— Deáki, *Herbich*, Tith., 76.
—— faustum, *Bayle*, Jur., 315.
—— Verestoicum, *Herbich*, Tith., 76.
Belemnites brevicanalis, munieri, sub-blainvillei, & tetramerus, *Deslongchamps*, Jur., 322.
Belemnopsis [preoccupied], *Bayle*, Jur., 315.
Buchiceras Fourneti & Tissoti, *Bayle*, Cret., 315.
Ceratites Djoulfensis, intermedius, pessoides, trochoides, & tropilus, *Abich*, Perm., 313.
Cosmoceras subpretiosum, *Uhlig*, Jur., 117.
Cylindroteuthis, *Bayle*, Dev., 315.
Cyrtoceras abditum & absens*, *Barrande*, Sil., 351.
—— absens*, *Hall*, Dev., 328.

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* A pretty question of priority. *Hall's* work dated 1876, but not published till 1878; *Barrande's* published 1877. *Hall* has figure only; *Barrande* figure and description.—W. H. D.

Cyrtoceras abstinens, acystos, adhærens, agile, & ambiguum-moderans, *Barrande*, Sil., 351.
—— amœnum, *Miller*, Cinc., 336.
—— athleta, bitogatum, bulbaceum, bulla, capillaceum, & carinarium, *Barrande*, Sil., 351.
—— Chaperi, *Bayle*, Dev., 315.
—— chrysalis & claudicans, *Barrande*, Sil., 351.
—— clavatum, *Hall*, Dev., 328.
—— compactum, concurrens, confortatum, constans, contemptum, contrastans, conturbatum, crumena, custos, desolatum, diprion, diversum, durum, eludens, Eurus, exesum-adornata, forte-consobrinum, f.-convertens, gentile, and genuinum, *Barrande*, Sil., 351.
—— gibbosum, *Hall*, Dev., 328.
—— hæsitans, humerosum, imperans, incertum, incongruens, intricans, invalidum, jubatum, jugale, lætificans, laminare, languescens, latissimum, limatulum, lumbosum, macrescens, macrosoma, memorator, nepotulus, normatum, Notus, Nováki, opponens, & opportunum, *Barrande*, Sil., 351.
—— Orion, *Hall*, Dev., 328.
—— ornatulum, Palinurus, parvulum-curtius, penultimum, perornatum, pirum, postscripti, proditum, pseudomorphum, pumilus, pupus, quærens, quasi-rectum-degener, reductum, remuneratum, repletulum, retusum, rigens, rusticans, sericarius, subula, tensum, tenuiculum, Thieroti, triste, & Turnus, *Barrande*, Sil., 351.
Cyrtoceras undulatum, *Hall*, Dev., 328.
—— vespertinum, *Barrande*, Sil., 351.
—— Zeilleri, *Bayle*, Dev., 315.
—— zephyrinum, *Barrande*, Sil., 351.
Dactyloteuthis, *Bayle*, Jur., 315.
Diploconus Stohandli, *Rzehak*, Jur., 106.
Duvalia, *Bayle*, Jur., 315.
Echioceras, *Bayle*, 315.
Geoteuthis libanotica, *Fraas*, Turon., 325.
Gomphoceras evolutum, imitans, impeditum, liberatum, sacculus, solidum, & surgens, *Barrande*, Sil., 351.
Goniatites peracutus, *Hall*, Dev., 328.
—— præmaturus, *Barrande*, Sil., 351.
Gonioteuthis, *Bayle*, Jur., 315.
Grammoceras fallaciosum, *Bayle*, 315.
Gyroceras Fritschii & modicum, *Barrande*, Sil., 351.
—— paucinodus, subliratum, & validum, *Hall*, Dev., 328.
Haaniceras, *Bayle*, 315.
Hamites exiguus, *Mathéron*, Cret., 424.
Hammatoceras, *Bayle*, Jur., 315.
Harpoceras andium, *Gottsche*, Jur., 328.
—— penninicum, *Uhlig*, Jur., 117.
Harpoceras proximum, Stelzneri, & Zitteli, *Gottsche*, Jur., 328.
Hibolites, *Bayle*, Dev., 315.
Hildoceras, *Bayle*, Jur., 315.
Hoplites gladiator, *Bayle*, Cret., 315.
Huronia minuens, *Barrande*, Sil., 351.
Jovellania, *Bayle*, Dev., 315.
Lillia, *Bayle*, Jur., 315.
Ludwigia sinon, *Bayle*, Jur., 315.
Megateuthis, *Bayle*, Jur., 315.
Mesoceras Bohemicum, *Barrande*, Sil., 351.
Nautilus armeniacus, *Abich*, Perm., 313.
—— Atlantoideus, *Koninck*, Carb., 332.
—— Barrandei, *Hall*, Dev., 328.
—— bifrons, *Koninck*, Carb., 332.
—— buccinum, *Hall*, Dev., 328.
—— conspicuus, *Koninck*, Carb., 332.
—— convergens, *Abich*, Perm., 313.
—— cordiostomus, *Koninck*, Carb., 332.
—— cornulum, *Hall*, Dev., 328.
—— crassiventer, *Koninck*, Carb., 332.
—— danvillensis, *White*, Carb., 347.
—— difficilis, discoideus, & distensus, *Koninck*, Carb., 332.
—— dolerus, dorsoarmatus, dorsoplicatus, *Abich*, Perm., 313.
—— elephantinus, exaratus, & eximius*, *Koninck*, Carb., 332.
—— eximius*, *Bayle*, Cret., 315.

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* Another question of priority; but *Bayle* has only figure, *Koninck* figure and description.

Nautilus extensus, humilis, implicatus, & infundibulum, *Koninck*, Carb., 332.
—— insperatus, *Barrande*, Sil., 351.
—— latiseptatus, latisinuatus, lyriostomus, neglectus, & normalis, *Koninck*, Carb., 332.
—— oriens, *Hall*, Dev., 328.
—— ornatissimus, *Koninck*, Carb., 332.
—— parallelus, *Abich*, Perm., 313.
—— prægravis, *Koninck*, Carb., 332.
—— propinquus & tubercularis, *Abich*, Perm., 313.
Neumayria*, *Bayle*, Jur., 315.
Nummulites Chavannesi, *Harpe*, Eoc., 329.
Oppelia Hantkeni, Kochi, & Mikoi, *Herbich*, Tith., 76.
Orthoceras abortum, aculeatum, apocryphum, & appellans, *Barrande*, Sil., 351.
—— Bebryx, *Hall*, Dev., 328.
—— Beyrichi, *Kayser*, Dev., 331.
—— bicinctum, *Abich*, Perm., 313.
—— Caroli, *Barrande*, Sil., 351.
—— constrictum, *Kayser*, Dev., 331.
—— dissidens, eminens, eruca, & fingens, *Barrande*, Sil., 351.
—— Hercynicum, *Kayser*, Dev., 331.
—— Hindei, *James*, Sil., 330.
—— Homerianum, ineditum, infelix, intrudens, & Karreri, *Barrande*, Sil., 351.
—— Kochi, lamelliferum, and Losseni, *Kayser*, Dev., 331.
Orthoceras luxum, *Hall*, Dev., 328.
—— margaritatum, *Abich*, Perm., 313.
—— Mojsisovicsi, *Barrande*, Sil., 351.
—— molestum, *Hall*, Dev., 328.
—— morator, orthoconum, & palma, *Barrande*, Sil., 351.
—— procrus, *Hall*, Dev., 328.
—— reconditum & remembrans, *Barrande*, Sil., 351.
—— robustum & rudicula, *Hall*, Dev., 328.
—— runicum, *Barrande*, Sil., 351.
—— Schillingi, *Kayser*, Dev., 331.
—— scindulare, seniculum, spina, superstes, & tenerrimum, *Barrande*, Sil., 351.
—— transversum & turritellum, *Abich*, Perm., 313.
—— umbelloides, viduum, & vittatulum, *Barrande*, Sil., 351.
Pachyceras, *Bayle*, 315.
Pachyteuthis, *Bayle*, Jur., 315.
Parkinsonia, *Bayle*, Jur., 315.
Perisphinctes hetærus, *Herbich*, Tith., 76.
—— Lorentzi, *Gottsche*, Jur., 328.
—— mosensis, *Bayle*, Jur., 315.
—— oxypleurus, siculicus, stenonotus, & Tantalus, *Herbich*, Tith., 76.
Phragmoceras adæquatum, angustum, baro, Bohemicum, Bolli, clypeatum, dux, hospes, inflexum, murale, princeps, raptor, & rigescens, *Barrande*, Sil., 351.
Phylloceras aulonotum, *Herbich*, Lias, 76.
—— Békasense, *Herbich*, Tith., 76.
—— Bielzii, *Herbich*, Lias, 76.
—— leptoptychum, *Herbich*, Tith., 76.
—— neogæum, *Gottsche*, Jur., 328.
—— nummulitoides, *Gemmellaro*, Jur., 326.
—— Personense, Rákosense, sylvestre, & Urmösense, *Herbich*, Lias, 76.
Pictonia, *Bayle*, 315.
Pusozia, *Bayle*, Cret., 315.
Reineckea, *Bayle*, Jur., 315.
Scaphites Coquandi & provincialis, *Mathéron*, Neoc., 424.
—— umbilicus, *Mœsch*, Cret., 337.
Schlotheimia, *Bayle*, 315.
Simoceras antipodum, *Gottsche*, Jur., 328.
Sonneratia, *Bayle*, Cret., 315.
Sonninia propinquans, *Bayle*, Jur., 315.
Sphæroceras, *Bayle*, Jur., 315.
Stephanoceras Freycineti, *Bayle*, Jur., 315.
—— Giebeli, multiforme, singulare, & submicrostoma, *Gottsche*, Jur., 328.
Trochoceras ænigma & inexpectatum, *Barrande*, Sil., 351.
—— obliquatus & Pandion, *Hall*, Dev., 328.
Turrilites nobilis, *Jukes-Browne*, Cret., 357.
—— quadrituberculatus, *Bayle*, Cret., 315.
Waagenia hybonota, *Neumayr*, Jur., 337.

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* Also adopted by Stefani for a Gasteropod.

PTEROPODA.

Coleoprion tenuicinctum, *Hall*, Dev., 328.
Conularia Cayuga, congregata, continens, & crebristria, *Hall*, Dev., 328.
Conularia formosa, *Miller & Dyer*, Sil., 336.
Hyolithes aclis, *Hall*, Dev., 328.
—— Lambei, *Barrande*, Sil., 351.
Hyolithes plicatus, *Brögger*, Camb., 51.
—— principalis & striatus, *Hall*, Dev., 328.

*** *Tentaculites*, placed among Gasteropoda by the authors dealing therewith in 1878, is an Annelid.

HETEROPODA.

Bellerophon crenistria, *Hall*, Dev., 328.
—— Lebescontei, *Tromelin*, Sil., 365.
—— mœra, obsoletus, & tricarinata, *Hall*, Dev., 328.
Cyrtolites magnus, *Miller*, Cinc., 336.
Ecculiomphalus comes, *Hall*, Dev., 328.

GASTEROPODA.

Acella Haldemani, *White*, Lar., 346.
Aclis Brugnoniana, *Stefani & Pantanelli*, Plioc., 343.
Actæonella absalonis, *Fraas*, Turon., 325.
—— Baylei, *Leymerie*, Cret., 85.
Actæonina Pompilia, *Gemmellaro*, Lias, 326.
Alaria Capellinii, Guiscardi, & psyche, *Gemmellaro*, Lias, 326.
—— thermarum, *Loriol*, Jur., 333.
—— tornata, *Gemmellaro*, Lias, 326.
Alariopsis clathrata, *Gemmellaro*, Lias, 326.
Alvania Aglaja, *Stefani & Pantanelli*, Plioc., 343.
—— Brusinai, *Schwartz*, Tert., under *Brusina*, 354.
—— Euphrosyne & Thalia, *Stefani & Pantanelli*, Plioc., 343.
Amberleya carpatica, *Uhlig*, Jur., 117.
Ancillaria pusilla, *Fuchs*, Tert., 356.
Aporrhais speciosa-Margerini & speciosa-megapolitana, *Credner*, Oligoc., 57.
Atys cannabis & Silvestrii, *Stefani & Pantanelli*, Plioc., 343.
Bithynia scalaris & simplex, *Fuchs*, Plioc., 133.
Bittium multiliratum, *Brusina*, Tert., 354.
Brocchia laciniata & simplex, *Brugnone*, Plioc., 353.
Buccinum incertum, *Abich*, Perm., 313.
Cadulus gaultinus, *Gardner*, Gault, 326.
Cæcum Monterosatoi & Nysti, *Stefani & Pantanelli*, Plioc., 343.
Cancellaria Deydieri, Druentica, & Gaudryi, *Fontannes*, Mioc., 67.
Capulus Forestii, *Stefani & Pantanelli*, Plioc., 343.
Capulus Halfari & Hercynious, *Kayser*, Dev., 331.
—— pusillus, *Brugnone*, Plioc., 353.
Cassis nuciformis, *Mathéron*, Cret., 424.
Cerithinella cerithiiformis, elegans, Italica, Manzonii, Piettei, Scherina, Stefanii, & turritelloides, *Gemmellaro*, Lias, 326.
Cerithiopsis Hörnesi, *Brusina*, Tert., 354.
Cerithium Ancai, *Gemmellaro*, Lias, 326.
—— Apenninicum, *Mayer*, Mioc. & Plioc., 335.
—— aptyxoides, *Gemmellaro*, Lias, 326.
—— architectum, *Pirona*, Jur., 99.
—— Baylei, *Mathéron*, Cret., 424.
—— Bellini, *Gemmellaro*, Jur., 356.

Cerithium Broecki, *Vincent*, Eoc., 365.
—— bufoninum, *Mayer*, Mioc., 335.
—— Chelloneixi, *Barrois & Guerne*, Cret., 315.
—— crystallinum, *Gemmellaro*, Lias, 326.
—— Daubréei, *Mathéron*, Cret., 424.
—— Deydieri, *Fontannes*, Mioc., 67.
—— Europæum, *Mayer*, Mioc. & Plioc., 335.
—— forojuliense, *Pirona*, Jur., 99.
—— fraterculus, *Mayer*, Plioc., 335.
—— Frauenfelderi, *Gemmellaro*, Lias, 326.
—— Galliculum, Gallicum, & Girondicum, *Mayer*, Mioc., 335.
—— Gulielmi, *Raincourt*, Eoc., 362.
—— Herbichi & heterocosmum, *Gemmellaro*, Lias, 326.
—— Isseli & Italicum, *Mayer*, Plioc., 335.
—— Lapugyense, *Mayer*, Mioc., 335.
—— Marticensis & Mayeri, *Mathéron*, Cret., 424.
—— Morrisii, *Vincent*, Eoc., 365.
—— muriciforme & pentaplocum, *Gemmellaro*, Lias, 326.
—— pirata, *Gemmellaro*, Jur., 356.
—— Pironai, *Gemmellaro*, Lias, 326.
—— puritanorum, *Gemmellaro*, Jur., 356.
—— quinquecinctum, *Vincent*, Eoc., 365.
—— Ranzanii, *Foresti*, Eoc., 355.
—— Rhodiense, *Fischer*, 355.
—— Rutoti, *Vincent*, Eoc., 365.
—— Strueveri & Todaroi, *Gemmellaro*, Lias, 326.
—— Tournoueri & Turonicum, *Mayer*, Mioc., 335.
Cerithium undatopictum, *Mayer*, Plioc., 335.
—— Zezii, *Gemmellaro*, Lias, 326.
Chemnitzia acutispira, Antiope, Aristomache, Cleola, Erope, Ethra, eulimoides, euspiroides, Falconeri, Gregorii, Hebe, Hersilia, *Gemmellaro*, Lias, 326.
—— incerta, *Mathéron*, Neoc., 424.
—— Janus, *Gemmellaro*, Lias, 326.
—— Lorioli, *Struckmann*, Jur., 111.
—— Marii, megastoma, Moorei, multipunctata, multistriata, Myrto, Niobe, parvula, polyplecta, pyramidellæformis, raphis, Rhea, & rupestris, *Gemmellaro*, Lias, 326.
—— Sancti Antonii, *Struckmann*, Jur., 111.
—— Stoliczkai, Tatia, Thalestris, transitoria, turgidula, & Veturia, *Gemmellaro*, Lias, 326.
Chenopus Delbosi, *Mathéron*, Neoc., 424.
—— Thielensi, *Vincent*, Eoc., 365.
Chiton liasinus, *Terquem & Berthelin*, Lias, 364.
Chrysostoma Sturi, *Uhlig*, Jur., 117.
Cissotrema Ausonia, *Stefani & Pantanelli*, Plioc., 343.
Clanculus Aaronis-valdecincta, *Fontannes*, Mioc., 67.
Clathurella Malenæ, *Stefani & Pantanelli*, Plioc., 343.
Clausilia Bizarellina, *Bourguignat*, Quat., 353.
—— Clessinii & collarifera, *Böttger*, Mioc., 352.
—— Gadualiana, *Bourguignat*, Quat., 353.
—— gonyptyx, liassiaca, Kochi, moguntina, & molassica, *Böttger*, Mioc., 352.
Clausilia oligogyra, *Böttger*, Eoc., 352.
—— perforata, plionecta, polyptyx, ptycholarynx, recticosta, Schæfferina, undatistria, & Wetzleri, *Böttger*, Mioc., 352.
Climacina Catherinæ, gracilis, Josephinæ, & Mariæ, *Gemmellaro*, Lias, 326.
Columbella vittata, *Stefani & Pantanelli*, Plioc., 343.
Cryptoplocus Zignoi, *Pirona*, Jur., 99.
Cyclonema concinna & crenistria, *Hall*, Dev., 328.
—— minor, *James*, Sil., 330.
—— obsoleta, *Hall*, Dev., 328.
Cyclostema curvistriatum, *Brugnone*, Plioc., 353.
Cypræa consobrina & contusa, *McCoy*, Tert., 359.
—— Lanciæ, *Brusina*, Tert., 354.
—— leptorhyncha, *McCoy*, Tert., 359.
—— præsanguinolenta, *Fontannes*, Mioc., 67.
—— Velaini, *Raincourt*, Eoc., 362.
Dejanira Heberti, *Leymerie*, Cret., 85.
Dentalium acuminatum & alatum, *Gardner*, Gault, 326.
—— brevifissum, *Brugnone*, Plioc., 353.
—— divisiense, *Gardner*, U. G. S., 326.
—— fusticulus, *Brugnone*, Plioc., 353.
—— Jeffreysi, *Gardner*, Gault, 326.
—— Landinense, *Vincent*, Eoc., 365.
Discohelix Neumayri & Petersi, *Uhlig*, Jur., 117.
Drillia Caturii & Monterosatoi, *Stefani & Pantanelli*, Plioc., 343.

Eione Paretoi, *Stefani & Pantanelli*, Plioc., 343.
Emmericia Casinii, *Pantanelli*, Tert., 147.
—— Lotti & umbra, *Stefani*, Plioc., 343.
Entalis Meyeri, *Gardner*, U. G. S., 326.
Erato Australis, *Tate*, Eoc., 344.
—— gigantula, *Fischer*, 355.
—— minor, *Tate*, Mioc., 344.
—— pieris, *Stefani & Pantanelli*, Plioc., 343.
Euchrysalis dactyliformis, *Gemmellaro*, Lias, 326.
Eulima bulimoides, *Mathéron*, Neoc., 334.
—— Carmelæ & piriformis, *Brugnone*, Plioc., 353.
Euomphalus hecate, inops, rudis, & tioga, *Hall*, Dev., 328.
Fasciolaria recticauda, *Fuchs*, Tert., 356.
Fibula gastaldi, *Gemmellaro*, Lias, 326.
Ficula clathrata, Cabrierensis, *Fontannes*, Mioc., 67.
Fissurella latecostata, *Brugnone*, Plioc., 353.
Fossarulus Crossei, *Brusina*, Tert., 318.
Fossarus costatus, crassicostata, *Fontannes*, Mioc., 67.
Fusus Colbeaui, *Vincent*, Eoc., 365.
—— immaturus, *Fuchs*, Tert., 356.
—— Landinensis, *Vincent*, Eoc., 365.
—— Ludovici, *Raincourt*, Eoc., 362.
—— marticensis & Martini, *Mathéron*, Cret., 424.
—— subaciculatus, *Brugnone*. Plioc., 353.
—— Wanzinensis, *Vincent*, Eoc., 365.
Globiconcha Lewisii, *Fraas*, Turon., 325.
Goniobasis Endlichii, *White*, Lar., 346.
Helicina undulata, *Morelet*, 337.
Helicotoma Naresii, *Etheridge*, Sil., 322.
Helix Chouquetiana, *Tournouër*, Quat., 116.
—— Evanstonensis, *White*, Lar., 346.
—— Neumayri, *Brusina*, Tert., 318.
—— senensis, *Pantanelli*, Tert., 147.
Hercynella Beyrichi & Hauchecorni, *Kayser*, Dev., 331.
Holopea Cammontii, *Tromelin*, Sil., 365.
Hydrobia attica, *Fuchs*, Plioc., 133.
—— confusa, *Böttger*, Tert., 316.
—— gregaria, Heldreichii, & Pauli, *Fuchs*, Plioc., 133.
—— regina, *Fischer*, Tert., 355.
—— Rhodiensis, *Tournouër*, Tert., 355.
—— Rossii, *Brusina*, Tert., 318.
—— tricarinata, *Böttger*, Tert., 316.
Itieria Caballi & decipiens, *Pirona*, Jur., 99.
—— norma, *Gemmellaro*, Jur., 356.
—— obesa & Polcenici, *Pirona*, Jur., 99.
—— sentisiana, *Moesch*, Cret., 337.
Lachesis recondita, *Brugnone*, Plioc., 353.
Limnæus bicarinatus, *Fuchs*, Plioc., 133.
—— Cucuronensis & Deydieri, *Fontannes*, Mioc., 67.
Lithoglyphus amplus, *Brusina*, Tert., 318.
Littorina dubia, *Brugnone*, Plioc., 353.
—— scotoburdigalensis, *Etheridge*, Carb., 323.
Loxonema bellona & compta, *Hall*, Dev., 328.
Loxonema Roemeri, *Kayser*, Dev., 331.
—— styliola, terebra, & teres, *Hall*, Dev., 328.
Macrocheilus ? primævus, *Hall*, Dev., 328.
Mangelia myrmido, *Fischer*, 355.
Marginella Aldingæ, *Tate*, Eoc., 344.
—— cassidiformis, *Tate*, Mioc., 344.
—— Hoernesi, *Brusina*, Tert., 354.
—— hordeacea, inermis, micula, muscarioides, Winteri, & Woodsi, *Tate*, Mioc., 344.
Mathilda Semperi, *Brusina*, Tert., 354.
—— tricincta, *Brugnone*, Plioc., 353.
Melania constricta, *Brusina*, Tert., 318.
—— De Stefani, *Pantanelli*, Tert., 147.
—— elegans, *Fuchs*, Plioc., 133.
—— elegantissima, *Pantanelli*, Tert., 147.
—— Gaji, *Brusina*, Tert., 318.
—— Lawley[i] & Soldania, *Pantanelli*, Tert., 147.
—— Tournoueri, *Fuchs*, Plioc., 133.
—— Verrii, *Stefani*, Plioc., 343.
Melanopsis arcuata, *Brusina*, Tert., 318.
—— Bittneri, *Fuchs*, Plioc., 133.
—— cognata & coronata, *Brusina*, Tert., 318.
—— flammulata, *Stefani*, Plioc., 343.
—— incerta, *Fuchs*, Plioc., 133.
—— oomorpha & Semperi, *Stefani*, Plioc., 343.
—— Thomasi, *Tournouër*, Plioc., 365.
Menestho craticulata, *Stefani & Pantanelli*, Plioc., 343.
Microhelix contracta, ovula, & unicincta, *Terquem & Berthelin*, Lias, 364.

Micromelania Rissoina & serratula, *Brusina*, Tert., 318.
Microschiza, *Gemmellaro*, Lias, 326.
Milne-Edwardsia Barreri, *Bourguignat*, Quat., 353.
Mitra bathmophora, *Fontannes*, Mioc., 67.
Monophorus Bartolimi, *Stefani & Pantanelli*, Plioc., 343.
Murchisonia latifasciata, *Etheridge*, Sil., 322.
—— multigruma, *Miller*, Cinc., 336.
Murex ambiguus, *Mathéron*, Cret., 424.
—— Campanii, *Stefani & Pantanelli*, Plioc., 343.
—— subproductus, *Fontannes*, Mioc., 67.
Nassa Caudellensis, *Fontannes*, Mioc., 67.
—— Cossmanni, *Depontaillier*, Plioc., 322.
—— Dexivæ, subduplicata, Druentica, & sublapsa, *Fontannes*, Mioc., 67.
—— Tournoueri, *Stefani & Pantanelli*, Plioc., 343.
Natica Arnaudi, *Mathéron*, Neoc., 424.
—— Billiemensis, *Gemmellaro*, Lias, 326.
—— Clio, *Mathéron*, Neoc., 334.
—— hypereuthele, *Fontannes*, Mioc., 67.
—— levistriata, *Jukes-Browne*, Cret., 357.
—— patulæformis, *Fraas*, Turon., 325.
—— Pellati & Pilleti, *Mathéron*, Neoc., 334.
—— præsolida, *Brugnone*, Plioc., 353.
—— semicostata, *Lepsius*, Trias, 84.
—— semistriata, *Trautschold*, Jur., 365.
Nematurella Silvestri, *Pantanelli*, Tert., 147.
Nerinæa Annæ, culturensis, & D'Achiardii, *Pirona*, Jur., 99.
—— Julietta, *Gemmellaro*, Jur., 356.
—— massilliensis, *Mathéron*, Neoc., 424.
—— pseudorenauxiana, *Moesch*, Cret., 337.
—— Schickii, *Fraas*, Turon., 325.
—— somnambula, *Gemmellaro*, Jur., 356.
—— Stelzneri, *Gottsche*, Jur., 328.
—— straniera, *Gemmellaro*, Jur., 356.
—— Taramellii, *Pirona*, Jur., 99.
Nerita Amphitrite, Beroë, & Calypso, *Gemmellaro*, Lias, 326.
—— carinata, *Fuchs*, Plioc., 133.
—— Clymene, Cornaliæ, Deshaysiæformis, Giordanoi, Haueri, & neritina, *Gemmellaro*, Lias, 326.
—— nodulosa, *Jukes-Browne*, Cret., 357.
—— oceanica & Philyræ, *Gemmellaro*, Lias, 326.
—— simplex, *Fuchs*, Plioc., 133.
—— Stoppanii, Tethys, & thalassica, *Gemmellaro*, Lias, 326.
Neritina baptista, *White*, Lar., 347.
—— Capellini, *Pantanelli*, Tert., 147.
—— Dumortieri, *Fontannes*, Mioc., 67.
—— imbricata & Lorkovici, *Brusina*, Tert., 318.
—— naticiformis, *White*, Lar., 346.
—— Pantanelli, *Stefani*, Plioc., 343.
—— Slavonica & sycophanta, *Brusina*, Tert., 318.
Neritopsis Busambrensis & frondosa, *Gemmellaro*, Lias, 326.
Neritopsis Haueri, *Uhlig*, Jur., 117.
—— ornata, *Fraas*, Turon., 325.
Neumayria*, *Stefani*, Plioc., 343.
Odontobasis ? formosa, *White*, Lar., 346.
Odostomia acliformis & Bulimulus, *Brugnone*, Plioc., 353.
—— clavulina, *Fischer*, 355.
—— crebrilirata, heterophana, incerta, macella, Michaelis, nana, nisoides, ovulum, pistillus, & plebeja, *Brugnone*, Plioc., 353.
Oonia, *Gemmellaro*, Lias, 326.
Opalia ridens, *Stefani & Pantanelli*, Plioc., 343.
Ovula Capellinii, *Stefani & Pantanelli*, Plioc., 343.
Pachystylus conicus, cylindricus, & subangulatus, *Gemmellaro*, Lias, 326.
Palæoniso appenninica, nana, ovata, & pupoides, *Gemmellaro*, Lias, 326.
Paludina ornata, *Fuchs*, Plioc., 133.
Patella conoidea & costata, *Lepsius*, Lias, 84.
Phasianella Kimmeridiensis, *Struckmann*, Jur., 111.
Physa felix, *White*, Lar., 346.
Planaxis Auingeri, *Brusina*, Tert., 354.
Planorbis lineolatus & striatus, *Brusina*, Tert., 318.
Platyceras auriculatum, *Hall*, Dev., 328.
—— naticoides, *Etheridge*, Sil., 322.
—— undatum, *Hall*, Dev., 328.
Platy[o]stoma aplata & defigurata, *Hall*, Dev., 328.
—— Giebeli, *Kayser*, Dev., 331.

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* Also adopted by Bayle for a Cephalopod.

Platy[o]stoma pleurotoma, *Hall*, Dev., 328.

Pleurotoma Balstoni, *Vincent.*, Eoc., 365.

—— candellensis, *Fontannes*, Mioc., 67.

—— Corneti, Dewalquei, Dollfusi, Gosseleti, Hallezi, & incompta, *Vincent*, Eoc., 365.

—— lanceola, *Brugnone*, Plioc., 353.

—— Loozi, Ortliebi, Rutoti, subduchasteli, & volutæformis, *Vincent*, Eoc., 365.

Pleurotomaria allandiensis, *Mathéron*, Neoc., 334.

—— apicalis, *Hall*, Dev., 328.

—— ardia, *Mathéron*, Neoc., 334.

—— delicatula, *Hall*, Dev., 328.

—— depressa, *Kayser*, Dev., 331.

—— disjuncta, *Hall*, Dev., 328.

—— elata, *Mathéron*, Neoc., 334.

—— Ella & filitexta, *Hall*, Dev., 328.

—— Heberti, *Mathéron*, Neoc., 334.

—— insolita & Itys, *Hall*, Dev., 328.

—— Moeschi, *Loriol*, Jur., 333.

—— Ohioensis, *James*, Sil., 331.

—— planidorsalis & plena, *Hall*, Dev., 328.

—— Taggarti, *Meek*, 360.

Pollia rudissima, *Brugnone*, Plioc., 353.

—— Tournoueri, *Fontannes*, Mioc., 67.

Porcellia Hertzeri & rotatoria, *Hall*, Dev., 328.

Potamides Gaudini, *Stefani & Pantanelli*, Plioc., 343.

Pseudolacuna macroptera, *Böttger*, Tert., 316.

Pseudoliva antiqua, *Vincent*, Eoc., 365.

Ptygmatis Escheri, *Moesch*, Cret., 337.

Pupa majuscula, *Morelet*, 337.

Pyrgula aspera, baccata & interrupta, *Brusina*, Tert., 318.

—— levissima, *Stefani*, Plioc., 343.

—— tri- [or quadri] carinata, *Fuchs*, Plioc., 133.

Raphitoma perforata, *Brusina*, Tert., 354.

Rhabdoconcha, *Gemmellaro*, Lias, 326.

Ringicula Africana, *Morlet*, Plioc., 337.

—— Baylei, *Morlet*, Mioc., 337.

—— Bezançoni, *Morlet*, Eoc., 337.

—— Bourgeoisi, Cacellensis, Crossei, elongata, & Fischeri, *Morlet*, Mioc., 337.

—— Gaudryana, *Morlet*, Mioc. & Plioc., 337.

—— leptocheila, *Brugnone*, Plioc., 353.

—— nana, *Morlet*, Eoc., 337.

—— Paulucciæ & Pontleviensis, *Morlet*, Mioc., 337.

—— quadriplicata, *Morlet*, Mioc. & Plioc., 337.

—— Sandbergeri, *Morlet*, Mioc., 337.

—— Tournoueri, *Morlet*, Mioc. & Plioc., 337.

Rissoa Ficaratiensis, *Brugnone*, Plioc., 353.

—— Monterosatoi & Prusi, *Fischer*, 355.

Rostellaria provincialis, *Mathéron*, Cret., 424.

—— robusta, *Rutot*, Eoc., 362.

—— Ruskini, *Fraas*, Turon., 325.

—— Zekeli, *Mathéron*, Cret., 424.

Sabatia utriculoides, *Stefani & Pantanelli*, Plioc., 343.

Scalaria abbreviata, *Barrois & Guerne*, Cret., 315.

—— mesogonia & turbonilla, *Brugnone*, Plioc., 353.

Siphonodentalium affine, *Gardner*, Gault, 326.

—— curvum, *Gardner*, Neoc. & Gault, 326.

—— hyalinum, *Brugnone*, Plioc., 353.

Solarium Gosseleti, *Barrois & Guerne*, Cret., 315.

—— Landinense, *Vincent*, Eoc., 365.

—— nuperrimum, *Brugnone*, Plioc., 353.

Stalioa acuta, *Stefani*, Plioc., 343.

Strombus inermis & Verneuili, *Mathéron*, Cret., 424.

Strophostylus varians, *Hall*, Dev., 328.

Succinea primæva, *Fontannes*, Mioc., 67.

Tomocheilus asper, clathratus, Deslongchampsi, gradatus, & semiplicatus, *Gemmellaro*, Lias, 326.

Tornatella lacrymoides, *Barrois & Guerne*, Cret., 315.

Triforis Herouvallensis, *Raincourt*, Eoc., 362.

—— myriococcus, *Brusina*, Tert., 354.

Trigonostoma, *Stefani & Pantanelli*, Plioc., 343.

Triton fenestratum, *Vincent*, Eoc., 365.

—— torulosum, *Brugnone*, Plioc., 353.

Trochotoma beatrix, *Gemmellaro*, Jur., 356.

—— marbachensis, *Hermite*, 330.

Trochus angulatus, Druentica, & Ayguesi, *Fontannes*, Mioc., 67.

—— bullula, *Fischer*, 355.

—— Cabrierensis, *Fontannes*, Mioc., 67.

—— Calenbergensis, *Struckmann*, Kim., 111.

—— prælineatus, *Fontannes*, Mioc., 67.

—— Prusi, *Fischer*, 355.

—— Schlüteri, *Barrois & Guerne*, Cret., 315.

Truncatella Wattebledi, *Benoist*, Tert., 316.
Turbo fallax, *Lepsius*, Rhætic, 84.
—— Heberti, *Barrois & Guerne*, Cret., 315.
—— Lorinæ, *Lepsius*, Rhætic, 84.
—— Moeschi, *Loriol*, Jur., 333.
—— Moreli, *Fraas*, Turon., 325.
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